Health-Related Quality of Life and Service Provision in Maltreated Children

Thesis (cumulative thesis)
Presented to the Faculty of Arts of the University of Zurich
for the degree of Doctor of Philosophy

by
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Accepted in the spring semester 2017 on the recommendation of:
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Zürich, 2017

ABSTRACT

Child maltreatment is a global problem and more common in our society than we would like to admit. Survivors suffer from diverse consequences, often until adulthood. The extent and heterogeneity of the negative consequences of child maltreatment strongly suggest consideration of the victims' health-related quality of life (HrQoL). HrQoL is a dynamic and multidimensional construct that includes physical, psychological, and social functions. It can be used to measure the impact of child maltreatment on these three dimensions.

Two studies presented in this dissertation project investigated the current state of research in this field and possible predictors of HrQoL in maltreated children and adolescents and found decreased HrQoL. As maltreated children and adolescents might be in special need of help, a third project analysed psychotherapy referrals in sexually victimized children and adolescents. Potential biases have been identified in these service referrals.

Overall, the three studies contribute to filling a gap in research into maltreated children and their HrQoL. By providing a deeper insight into these aspects, this thesis contributes to a broader understanding of HrQoL and service referrals in maltreated children.

ZUSAMMENFASSUNG

Kindesmisshandlung ist ein weltweites Problem und häufiger in unserer Gesellschaft, als wir es wahrhaben wollen. Betroffene leiden unter diversen Konsequenzen, oft bis ins Erwachsenenalter hinein. Ausmass und Heterogenität der negativen Folgen durch Kindesmisshandlung wirken sich stark auf die gesundheitsbezogene Lebensqualität (engl. Health-related Quality of Life; HrQoL) der Opfer aus. HrQoL ist ein dynamisches und multidimensionales Konstrukt, das physische, psychologische und soziale Funktionen vereint und die Auswirkungen der Misshandlung in eben diesen drei Dimensionen misst.

Zwei Studien im Rahmen dieses Dissertationsprojektes untersuchten den aktuellen Stand der Forschung auf diesem Gebiet sowie mögliche Prädikatoren von HrQoL bei misshandelten Kindern und Jugendlichen. Beide fanden verminderte HrQoL.

Da vermutet wird, dass misshandelte Kinder und Jugendliche Hilfe besonders benötigen, analysierte ein drittes Projekt Überweisungen zu psychotherapeutischen Behandlungen bei sexuell misshandelten Kindern und Jugendlichen. Dabei wurden mögliche Voreingenommenheit und Tendenzen der überweisenden Personen festgestellt.

Insgesamt tragen die drei Studien dazu bei, eine Lücke in der Forschung misshandelter Kinder und deren HrQoL zu schliessen. Durch einen tieferen Einblick in diese Aspekte trägt die vorliegende Forschungsarbeit zu einem breiteren Verständnis von HrQoL und Überweisungen zu psychotherapeutischen Behandlungen nach Kindesmisshandlung bei.

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ABBREVIATIONS

ADHD	Attention Deficit Hyperactivity Disorder
AIC	Akaike Information Criterion
AQoL	Assessment of Quality of Life Questionnaire
BIC	Bayesian Information Criterion
CANMANAGE	Child Abuse and Neglect Case-Management
CSV	Child sexual victimization
HIV	Human Immunodeficiency Virus
HPA (axis)	Hypothalamus-Pituitary-Adrenal (axis)
HrQoL	Health-related quality of life
JVQ	Juvenile Victimization Questionnaire
KIGGS	Studie zur Gesundheit von Kindern und Jugendlichen in Deutschland
K-SADS-PL	Schedule of affective disorders and schizophrenia for school-age children
MOR	Median Odds Ratio
NIS	U.S. National Incidence Study of Child Abuse and Neglect
OECD	The Organisation for Economic Co-operation and Development
OHG	Opferhilfe Gesetz
OR	Odds Ratio
PDS	Posttraumatic stress diagnostic scale
PedsQL	Pediatric Quality of Life Inventory
PERQ-D	Parents Emotional Reactions Questionnaire
PHQ-D	Patient Health Questionnaire
PTBS	Posttraumatic stress disorder
PTSS	Posttraumatic stress symptoms
QoLI	Quality of Life Interview, Brief Version
SCC	Swiss Civil Code
SDQ	Strengths and Difficulties Questionnaire
SES	Socioeconomic Status
SF-36	Medical Outcomes Study 36-Item Short-Form Health Survey
SOEP	German Socio-Economic Panel Study
TAPQoL	TNO-AZL Preschool Quality of Life Questionnaire

UCLA PTSD RI	University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WHO	World Health Organization

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A. GENERAL INTRODUCTION

The aim of this doctoral thesis was to learn more about the impact of child maltreatment on the children's health-related quality of life (HrQoL) and about service provision after child sexual victimization (CSV). HrQoL provides information about the functioning of the child in the broad areas of his or her daily life. In accordance with the World Health Organization's (WHO) statement that health is not only the presence or absence of disease (1946), quality of life assesses information that goes beyond the diagnosis of a disease. Further, if maltreated children do not function well and (mental health) problems arise, the provision of professional help such as psychotherapy is important. Psychotherapy referrals in sexually victimized children in Switzerland were also assessed in a project included in this dissertation.

This introductory chapter (Chapter A) gives some background information on the issue. First, an overview is provided of child maltreatment, including prevention and intervention options such as psychotherapy (Section A1). Second, HrQoL is introduced as an outcome measure in the field of child maltreatment (Section A2).

The empirical part of this work (Chapter B) comprises three articles. First, we conducted a systematic review of the current state of research on HrQoL in maltreated children and adult survivors of child maltreatment (Section B1). Second, we compared HrQoL in maltreated children with non-maltreated peers and identified possible predictors of HrQoL in maltreated children (Section B2). The third article presents data with which we evaluated who is referred for psychotherapy after CSV in Switzerland (Section B3).

Finally, Chapter C provides an overall summary and discussion of the results of the three research projects (Sections C1 and C2); a discussion of limitations (Section C3); implications for researchers, clinicians, and policies (Section C4); and a general conclusion (Section C5). For simplicity, the term *children* was used for individuals aged from 0 to 18 years.

1 Child maltreatment

The first part of this general introduction provides an overview of child maltreatment. The opening section presents some considerations about the definition of child maltreatment. Then, an overview is given of epidemiology and etiology. Finally, information is provided on adjustment, maladjustment, and options for prevention and intervention, such as psychotherapy referrals.

1.1 Definitional considerations

History provides evidence that children have always been murdered, sexually exploited, beaten, and forced into slavery (Aries, 1962). Such events were not considered as child maltreatment, and parents and other caregivers were free to do whatever they wanted. The psycho-historian De Mause has said:

> *"The history of childhood is a nightmare from which we have only recently begun to awake. The further back in history one goes, the lower the level of child care and the more likely children are to be killed, abandoned, beaten, terrorized and abused."* (De Mause, 1974, p.1)

However, recent decades have seen growing efforts to prevent child maltreatment. New public policies and expanded service programmes have been developed, based on a modern understanding of prevalence rates and the consequences of child maltreatment (English, 1998). This understanding relies on generally accepted definitions of child maltreatment (English, 1998). Estimates of child maltreatment rates and severity depend on how these definitions of child maltreatment are operationalized. In order to estimate the dimensions of child maltreatment and to identify children at highest risk of severe consequences, valid information is needed about the incidence and prevalence rates as well as the severity of the maltreatment. Further, consistent information and therefore a general accepted definition are crucial to assessing changes in incidence and prevalence rates (Leeb, Paulozzi, Melanson, Simon, & Arias, 2008). However, definitions of maltreating parenting and acceptable parental disciplinary practices vary across cultures and historical periods (Cicchetti & Toth, 2015), and the definition of child maltreatment used in the legal and social systems differs from that given by researchers and service providers. The definition of child maltreatment used in legal settings may well be impracticable for scientific purposes. In research situations, all the variables addressed need to have an operational definition. Additionally, a system-

atized terminology of child maltreatment is essential for comparing research findings and prevalence rates (Cicchetti & Toth, 2015). Overall, consistent terminology is important in the field of child maltreatment.

A general overview of terminology in the field of child maltreatment is given by the World Health Organisation (WHO). Here, child maltreatment is defined as "any acts or series of commission or omission by a parent or other caregiver that result in harm, potential for harm, or threat of harm to a child." (Leeb et al., 2008, p. 11). Importantly, this harm does not need to be done on purpose. Four types of child maltreatment are widely differentiated: physical maltreatment, sexual abuse, emotional maltreatment (sometimes referred to as psychological maltreatment) and neglect. While physical, sexual and psychological maltreatment are defined as acts of commission, neglect is categorized as act of omission (Leeb et al., 2008). An additional form of child maltreatment that is increasingly reported is witnessing intimate-partner violence. These children might be harmed emotionally by witnessing someone they love being harmed or by being entangled in violence within the family (Gilbert, Widom, et al., 2009).

In recent years, there have been initial approaches to modify the definition of child sexual abuse to child sexual victimization (Averdijk, Mueller-Johnson, & Eisner, 2011; Barter, McCarry, Berridge, & Evans, 2009). The widely used definition of child sexual abuse proposed by Leeb et al., (2008) includes the relationship of the abused child with a caregiver. The definition of the WHO also includes a relationship of responsibility, trust, or power of the abuser towards the child (World Health Organization, 1999). However, children experience a variety of forms of sexual victimization that are not sufficiently represented by this definition. Child sexual victimization committed by strangers or peers often occur in situations other than those of dependence or power (Averdijk et al., 2011). Definitions of the different forms of child maltreatment are presented in Table 1.

Table 1. Definitions of child maltreatment

Child maltreatment*	Any act of commission or omission that results in harm, potential harm or threat of harm to a child. This harm does not need to be intended.
Physical maltreatment*	Intentional use of physical force against a child that results in, or has the potential to result in, physical injury.
Sexual victimization**	Any criminal sexual acts against children, irrespective of the relationship between perpetrator and victim.
Psychological (emotional) maltreatment*	Intentional behaviour that conveys to a child that she/he is worthless, unloved, unwanted, flawed, endangered or valued only in meeting another's needs.

Neglect*	Failure to meet a child's basic physical, emotional, medical, dental or educational needs.
Intimate-partner violence***	Any incident of threatening behaviour, violence or maltreatment between adults who are (or have been) intimate partners or family members.

* Definitions are based on Leeb et al., 2008, p.11-17

** Definition is based on Averdijk et al., 2011, p. 17

*** Definition is based on Gilbert et al., 2009, p. 69

1.2 Epidemiology and Etiology

Given the definitional considerations of child maltreatment, studies on prevalence and incidence rates need to be viewed critically, and the reader should always keep in mind that statistics depend on the definitions used in the specific analysis. This section provides some information on prevalence statistics and risk factors for child maltreatment.

1.2.1 Prevalence statistics on child maltreatment

A problem that arises in research on maltreated children is that it can only be conducted with identified children. It may be that undetected maltreated children differ from those who are detected. Another problem in research on child maltreatment is that child maltreatment often occurs within the privacy of the home. This environment is normally not open to intense examination. Further, both parents and children are often motivated to keep maltreatment secret. These problems present a challenge for research on child maltreatment. Despite these problems, estimated prevalence rates of child maltreatment have been reported for countries all over the world.

Estimated prevalence rates are 127 per 1000 for sexual abuse (76 per 1000 among boys and 180/1000 among girls), 226 per 1000 for physical abuse, 363 per 1000 for emotional abuse, 163 per 1000 for physical neglect and 184 per 1000 for emotional neglect (Stoltenborgh, Bakermans-Kranenburg, Alink, & van IJzendoorn, 2015). Due to underreporting and the use of single data sources (e.g. self-reports or medical records), prevalence rates of child maltreatment are likely to be underestimated (Leeb et al., 2008). The prevalence rate of sexual victimization in boys is both underreported and underestimated (Wekerle, Miller, Wolfe, & Spindel, 2006).

The average lifetime costs per victim of child maltreatment in the United States are estimated to be $1,272,900 per victim of fatal child maltreatment and $210,012 per victim of nonfatal child maltreatment. The costs of nonfatal child maltreatment include childhood healthcare costs ($32,648), adult medical costs ($10,530), productivity losses ($144,360), child welfare costs

($7,728), criminal justice costs ($6,747), and $7,999 of special education costs (Fang, Brown, Florence, & Mercy, 2012).

Most studies measure the frequency of child maltreatment by analysing self-reports, parent reports, and/or official statistics from agencies investigating victims (Gilbert, Widom, et al., 2009). Inconsistencies and biases occur in all of these measures, so prevalence rates are normally presented as estimates. Despite the uncertainty of these estimates, it is clear that there is a gap between the maltreatment rates provided by child protection agencies and the higher rates of child maltreatment self-reported by the victims or parents/caregivers. This underlines the fact that only a small proportion of child maltreatment are reported to agencies (Finkelhor, 2008). Self-reports are probably closer to the truth. However, biases in self-reports of child maltreatment have also been investigated and include forgetting, embarrassment, misunderstanding, and denial (Melchert & Parker, 1997). Further, different maltreatment forms tend to overlap: neglect is normally chronic and ubiquitous, whereas most physical maltreatment events occur within disciplinary practice in attempts to stop young children crying (e.g. shaken baby syndrome; Wekerle et al., 2006). Retrospective self-reports show that many children are exposed to more than one form of child maltreatment (Finkelhor, Ormrod, Turner, & Hamby, 2005; Gilbert, Widom, et al., 2009).

1.2.2 Risk factors for child maltreatment

We have seen that child maltreatment occurs all over the world and that prevalence rates are high. However, not all children are in danger of being maltreated. Research has identified some risk factors for child maltreatment, but single-risk-factor models are insufficient to account for the complex processes which may lead to the maltreatment of a child. Many factors increase the likelihood that a child will be maltreated. Several levels of influence need to be considered to understand this complex etiology. A child does not exist on its own but is part of a family, which is part of a broader social context (Bronfenbrenner, 2000). Previously identified risk factors for child maltreatment can be categorized as child factors, family factors, extrafamilial factors, and cultural factors (McCoy & Keen, 2014). It is important to mention that all the factors thus far identified only increase the likelihood of child maltreatment.

Risk factors at child level

Previous research has found that female gender and younger age of the child are both associated with child maltreatment (e.g. Belsky, 1993). Additionally, children with disabilities are

more often maltreated than children without disabilities (Murphy, 2011). Research has shown that even minor delays in the development of the child are challenges for parents and increase the risk of being maltreated. These factors cannot be changed, which makes them even more dangerous.

Risk factors at family level

Family factors associated with an increased risk for child maltreatment can further be categorized into parental factors, family structure, and functional factors. Parental factors include the gender and age of the parent. Neglect occurs more often with female caregivers, whereas sexual abuse is more commonly committed by men (Sedlak et al., 2010). Additionally, young parenthood increases the risk for child maltreatment (Stith et al., 2009).

An additional parental factor is parental substance abuse, which is frequently associated with all types of child maltreatment. About 80% of the families that are reported to any kind of child protection agency have a substance abuse problem (Winton & Mara, 2001).

Further, parental mental illness is associated with an increased risk of child maltreatment (Brown, Cohen, Johnson, & Salzinger, 1998). In particular, the most common mental disorder, depression, has repeatedly been associated with child maltreatment. Depressed mothers are more likely to lack positive interactions with children and to use harsh punishment (Zuravin, Bliss, Cohen-Callow, Kendall-Tackett, & Giacomoni, 2005).

Additionally, lack of preparation has been identified as a risk factor for child maltreatment. Parents who are not prepared to adequately fulfil the parental role are more likely to neglect their child (McCoy & Keen, 2009). Further, lack of knowledge about parenting and parenting techniques might lead to physical punishment (Dorne, 2002).

Finally, intergenerational transmission has repeatedly been associated with child maltreatment (F. Li, Godinet, & Arnsberger, 2011). Parents with a maltreatment history in their own childhoods are more likely to maltreat their own children. The intergenerational transmission rate is estimated to be approximately 30% (McCoy & Keen, 2009). Reasons to explain why former maltreated children may become maltreating parents in later years include the idea that people simply do what they know and have seen done by their parents. Further, parents with a maltreatment history may suffer from diverse problems such as lack of attachment skills, lack of empathy, social isolation, and substance abuse, which make it difficult to take care of a child in an adequate way (McCoy & Keen, 2014).

Familial factors that increase the risk for child maltreatment include single parenting, domestic violence and large family size. Children who are raised by a single parent are at higher risk

of being maltreated (Sedlak et al., 2010). Additionally, children who grow up in a home with intimate partner violence can also be physically harmed or may be psychologically harmed by seeing the violence (Graham-Bermann, 2002). Growing up in a large family also increases the risk of child maltreatment. In such families, more stressors are present, and fewer resources may be available (McCoy & Keen, 2009). Also low socioeconomic status and unemployment have repeatedly been associated with an increased risk for child maltreatment (Stith et al., 2009).

Further, poor family functioning might be a risk factor for child maltreatment at the family level. Communication problems, fewer positive interactions, unclear family roles, and coping problems in the family are associated with an increased risk of child maltreatment (Paavilainen, Åstedt-Kurki, Paunonen-Ilmonen, & Laippala, 2001). Finally, research indicates that conflicts between parents, low marital satisfaction and low family cohesion are associated with an increased risk of child maltreatment (Stith et al., 2009).

Risk factors at extrafamilial and cultural levels

It is not only child, parental, and family factors that can increase the risk of child maltreatment, but also factors of the environment and culture, such as lack of social support and poverty (Brown et al., 1998). Additionally, the risk of child maltreatment rises in cultures where violence such as corporal punishment is accepted as a parenting technique. In the United States for example, corporal punishment is generally accepted and not considered as abusive. It has been found that abusive parents are more likely to punish their children physically than non-abusive parents (Brown et al., 1998).

1.3 Adjustment and maladjustment in maltreated children

The experience of maltreatment and its consequences are unique to each child, and every child reacts differently to these events. Both negative developmental consequences and resilience occur in the interplay of vulnerabilities and protective factors. To better understand this interplay between the characteristics of the child, the maltreatment event, the child's environment, and the consequences of the maltreatment, the Transactional Trauma Adjustment Model (Landolt, 2003), is introduced and adapted to the topic of child maltreatment.

1.3.1 Transactional Trauma Adjustment Model (Landolt, 2003)

The Transactional Trauma Adjustment Model (Landolt, 2003) is based on the Transactional Stress Theory (Lazarus, 1974). Adapted to the field of child maltreatment, the model can describe

post-maltreatment adaptation as an active interaction between the characteristics of the maltreatment, the child, and the social context. The interplay of these variables on maltreatment adaptation may be direct or indirect (see Figure 1). The model can explain why children who experience maltreatment are not all affected similarly, and why some children do not succumb to negative consequences despite experience of maltreatment. Maltreatment characteristics (e.g. type of maltreatment), child characteristics (e.g. gender, age), and the social context (e.g. reaction of the parents) interact with personal appraisals and coping processes of the child and determine the psychosocial consequences of the maltreatment.

The characteristics mentioned can act as risk factors or as protective factors for adverse consequences. Whether child maltreatment leads to adverse psychosocial outcomes depends on how the child interprets and evaluates the maltreatment (Landolt, 2012).

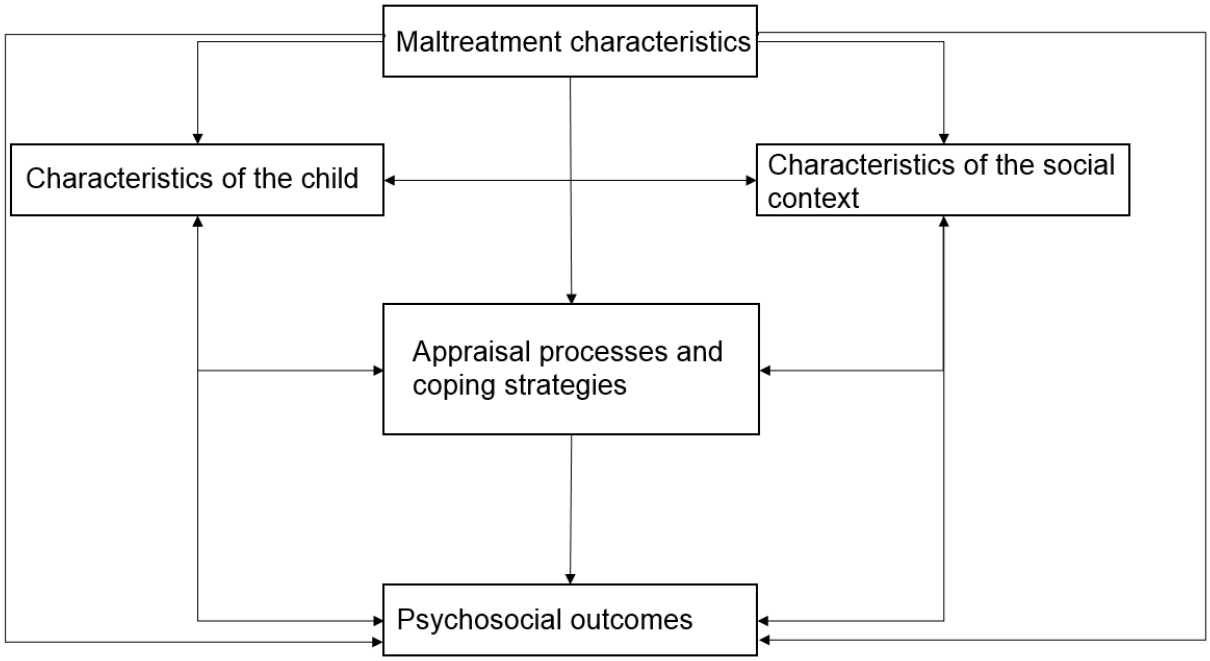

Figure 1. Transactional Trauma Adjustment Model (adapted from Landolt, 2003)

1.3.2 Adjustment and resilience in maltreated children

As we have seen, the response of a child to a maltreatment history depends on diverse factors. The characteristics of the maltreatment itself, the characteristics of the child, and the social context interact with coping strategies and appraisal processes and lead to different psychosocial outcomes. Even though they face a high risk of maladaptation and psychopathology, not all children with a maltreatment history show negative developmental trajectories. Some children seem to escape the adverse consequences. These children are described as being resilient. Resilience has

been defined as positive adaptation to extreme adverse experiences (Luthar, Cicchetti, & Becker, 2000). Resilient children also have to deal with negative emotions, but they manage to adjust better after maltreatment (McCoy & Keen, 2014).

Several factors and personality characteristics have been identified as protective factors associated with resilience. Following the Transactional Trauma Adjustment Model (Landolt, 2003), these factors can be categorized into those concerning the maltreated individual and those concerning the family and social context. In addition, one factor concerns the maltreatment: Children are more likely to be resilient following low-level to moderate maltreatment than high-level maltreatment (Cloitre, Martin, & Linares, 2004). We can therefore expect children who have experienced severe maltreatment to be less resilient than those who suffer milder forms (McCoy & Keen, 2014).

Protective characteristics of the victim

Some factors linked to the victim have repeatedly been associated with resilience after child maltreatment. For example, research indicates that positive self-esteem and easy temperament are associated with resilience in maltreated children (Moran & Eckenrode, 1992).

Interestingly, intelligence has not consistently been found to be a resilient factor. Some studies found a weak or no relationship between resilience and intelligence (Afifi & Macmillan, 2011), while others found a positive association (e.g. Masten, Powell, & Luthar, 2003). However, school performance and self-esteem might play mediating roles between intelligence and resilience. Intelligence might lead to better school performance, and this better performance in return might lead to higher self-esteem, which is positively associated with resilience (Heller, Larrieu, D'Imperio, & Boris, 1999). Further, different cognitive strategies in intelligent children may allow them to cope better with maltreatment.

Additionally, disclosure and discussion of maltreatment can lead to better coping and to resilience. It has been noted that survivors of child sexual abuse who disclose and discuss their maltreatment reduce the abusive experience and might reframe the experience in a way that is more positive for them. These victims have thought about their maltreatment and have not denied it (Himelein & McElrath, 1996).

Other characteristics of resilient victims are goal orientation and persistence. These children are committed to tasks (e.g. athletic successes), their goals are important to them, and they enjoy the need to complete them (Cloitre et al., 2004).

Optimism has also been found to be associated with resilience in maltreated children. These children believe that life is meaningful and that they are able to cope with their experience (Masten et al., 2003).

Spirituality is another factor which has been identified as protective after child maltreatment. Participation in religious groups might provide additional social support, and belief in a higher power could give victims the feeling of mattering despite their maltreatment experience (Heller et al., 1999; Oliver, 2007).

Further, it has also been found that having a talent, for example playing a musical instrument, is a potential protective factor after child maltreatment. If this talent is valued by others (e.g. peers or parents), it might lead to increased self-esteem (Oliver, 2007).

The ability to respond quickly to potentially dangerous situations has also been found to be a protective factor after child maltreatment. These children can identify potentially dangerous situations and are able to adapt and respond quickly and therefore might avoid harm (Mrazek & Mrazek, 1987).

Research which addressed adult survivors of child maltreatment found individuals who have an internal locus of control to be more likely to be resilient (Moran & Eckenrode, 1992). These persons believe they can control the event that happened to them. This feeling of control is associated with higher levels of self-esteem and lower levels of depression. On the other hand, external attributions of blame are associated with resilience in female victims of sexual abuse (Heller et al., 1999). This means that sexually abused women who blame the maltreatment on the offender and not themselves are more likely to cope better (McCoy & Keen, 2014).

Protective factors of the family and social context

Family level factors provide an important source of resilience for children after maltreatment. Having a consistent and supporting adult caregiver and a stable family environment are two related factors that have repeatedly been associated with resilience after child maltreatment. A positive relationship with a consistent and supportive caregiver in early years helps the child to learn that other people provide support and can be counted on. Further, the child's sense of self-worth is increased by being cared for, and the stress experienced by the maltreatment decreases (McCoy & Keen, 2014). Maltreated children with consistent caregivers show fewer behaviour problems and posttraumatic stress symptoms and are less likely to be depressed (e.g. Afifi & Macmillan, 2011).

Positive peer relationships are also associated with resilience. Self-esteem can play an important role in reciprocal friendships. Maltreated children with a reciprocal friendships show higher self-esteem and more resilience after child maltreatment than children without such a friendship (Masten et al., 2003).

Furthermore having less stress and anger experienced in the family is described as a potential resilience factor on the family level (Masten & Wright, 1998). Additionally, children raised by authoritative parents are more likely to be resilient. This parenting style includes a warm, loving response together with clear expectations and boundaries (Oliver, 2007). Additionally, parental involvement can lead to resilience. Maltreated children with parents who spend time with their children and are involved in activities are more likely to be resilient (Oliver, 2007).

The social environment of the child plays an important role as a third source of resilience. Social support and religion have been identified as protective factors after child maltreatment at the community level (Afifi & Macmillan, 2011). Factors such as the presence of high-quality social services and healthcare services are also associated with resilience after child maltreatment. These provide high-quality help and support the victims (McCoy & Keen, 2014).

1.3.3 Maladjustment and consequences of child maltreatment

Even though some children do adjust well after maltreatment and do not develop any sequelae, many children react negatively to maltreatment and misadjust. There is evidence for associations between child maltreatment and mental health, physical health and sexual behaviour, education and academic performance, and crime and violence (Buckingham & Daniolos, 2013; Norman et al., 2012). Potential immediate or short-term consequences include injuries such as fractures, contusions and brain damages, shaken baby syndrome, and acute stress reactions (Buckingham & Daniolos, 2013). Potential long-term sequelae of child maltreatment were reviewed by Gilbert et al. (2009). Because of differences in the validity of various assessment methods, the evidence of an association between diverse possible consequences of child maltreatment and child maltreatment varies (Gilbert, Widom, et al., 2009). Notably, not only mental health problems but also long-term physical health outcomes have been associated with maltreatment in childhood. Cancer and lung, heart, and liver diseases in adulthood have repeatedly been linked with child maltreatment (Draper et al., 2008). In addition, maltreated children are at increased risk of developing aggressive and criminal behaviours (Hubbard & Pratt, 2002). Table 2 summarizes the results of the review by Gilbert et al., (2009), complemented with more recent literature.

Table 2. Overview of long-term consequences of child maltreatment

Consequence	Degree of evidence for association with child maltreatment	Examples of literature
Mental health		
Behaviour problems	strong evidence	(Buckingham & Daniolos, 2013; Thornberry, Ireland, & Smith, 2001)
Posttraumatic stress disorder	strong evidence	(Brewin, Andrews, & Valentine, 2000; Lansford et al., 2002)
Depression	moderate to strong evidence	(Lansford et al., 2002; Norman et al., 2012)
Suicide attempts	moderate to strong evidence	(Evans, Hawton, & Rodham, 2005; Norman et al., 2012; Widom, 1998)
Self-injurious behaviour	weak evidence	(Klonsky & Moyer, 2008)
Alcohol problems	moderate to strong evidence	(Norman et al., 2012; Simpson & Miller, 2002)
Drug misuse/dependence	inconsistent	(Bair-Merritt, Blackstone, & Feudtner, 2006; Buckingham & Daniolos, 2013)
adult psychosis	inconsistent	(Morgan & Fisher, 2007; Read, Os, Morrison, & Ross, 2005)
personality disorder	inconsistent	(Johnson et al., 2001; Widom, 1998)
Physical health		
General adult health	moderate evidence	(Draper et al., 2008; Felitti et al., 1998)
Chronic pain in adulthood	weak evidence	(Buckingham & Daniolos, 2013; D. A. Davis, Luecken, & Zautra, 2005)
Obesity	inconsistent	(Lissau & Sorensen, 1994; Thomas, Hyppönen, & Power, 2008)
Health-care use/costs	moderate evidence	(Bonomi, Anderson, et al., 2008; Fang et al., 2012)
Sexual behaviour		
Prostitution/sex trading	moderate to strong evidence	(Arriola, Louden, Doldren, & Fortenberry, 2005; Wilson & Widom, 2008)
Teenage pregnancy	strong evidence	(Lansford et al., 2007; Thornberry et al., 2001)
Promiscuity	inconsistent	(Kalichman, Gore-Felton, Benotsch, Cage, & Rompa, 2004; Paolucci, Genuis, & Violato, 2001)
Education		
Low educational achievement	weak to moderate evidence	(Boden, Horwood, & Fergusson, 2007; Lansford et al., 2002)
Low skilled employment	moderate evidence	(Widom, 1998)
Aggression/ criminality		
Criminal behaviour	strong evidence	(Hubbard & Pratt, 2002; Widom, 1998)
Quality of life	inconsistent	(Prosser & Corso, 2007; Weber, Jud, & Landolt, 2015)

* adapted and expanded from Gilbert et al., 2009

In summary, the long-term consequences and burdens of child maltreatment are enormous. However, the mechanisms of exposure to maltreatment of different types at different development stages are complex and still not fully understood. Possible mechanisms include biological and learning theories and are presented in the next section.

1.3.4 Mechanisms explaining the effects of child maltreatment

As we have seen, child maltreatment leads to substantial behavioural, mental, and physical health consequences. But how does this experience of maltreatment lead to such consequences? Why are these children at increased risk for later diseases and maladjustment? Possible explanations and conceptual models can be found in neurobiological and psychological theories.

Neurobiological mechanisms

Child maltreatment occurs while a child's brain is developing. It can lead to atypical development and structural alterations in various brain regions. These effects can help to explain the onset of certain psychopathologies.

The hypothalamus-pituitary-adrenal (HPA) axis is a complex system of influences and interactions between the hypothalamus, the pituitary gland, and the adrenal glands. It plays a key role in the physiological stress response of an individual. This neuroendocrine system controls and regulates body processes such as the immune system, the emotions, and the mood (Malenka, Nestler, & Hyman, 2009). Glucocorticoids, which are steroid hormones produced by the HPA system, are important for maintaining circadian patterns of daily activities such as sleep and energy regulation. Excessive stimulation of the HPA axis by severe chronic stress such as maltreatment may result in adaptive changes in this HPA axis and can progress to a state of chronic adrenal stress hyperreactivity (Tyrka, Ridout, & Parade, 2016). A review has analysed the association between early adverse life events and atypical development of the HPA axis stress response, which may lead to psychopathologies in later years (McCrory, De Brito, & Viding, 2010). For example, dysregulation of the HPA axis has been associated with major depressive disorders and posttraumatic stress disorder in females (Shea, Walsh, MacMillan, & Steiner, 2005); with morphological alterations in diverse brain areas such as lateral prefrontal cortex, corpus callosum, anterior cingulate, and adult hippocampus; and with reduced striatal response to anticipated rewards and increased amygdala response to emotional faces (Teicher & Samson, 2016).

Most studies addressing alterations in brain structures have primarily focussed on the amygdala, cerebral cortex, and hippocampus, as these regions are known to be highly stress sensitive.

The amygdala is a limbic structure that is involved in detecting and responding to salient stimuli (e.g. facial expressions and potential threats) and in encoding implicit emotional memories (LeDoux, 1993). A high density of glucocorticoid receptors in the amygdala makes this structure highly sensitive to early stress (Teicher & Samson, 2016). Exposure to excessive stress and an increased stimulation by glucocorticoids leads to an initial increase in volume. However, this early

exposure can sensitize the amygdala to further stress, which results in a reduction in amygdala volume in late adolescence and adulthood. Functional or structural alterations in the amygdala have been reported in such psychiatric disorders as depression, drug addiction, borderline personality disorder, and posttraumatic stress disorder (e.g. Grotegerd et al., 2014; Koob & Volkow, 2010). However, the complex interplay between early or later exposure to excessive stress, increase or decrease in amygdala volume, and presence or absence of psychopathology is not fully understood.

The cerebral cortex consists of diverse structures. These structures do not develop synchronically; development of the sensory and motor cortical regions occurs earlier, and development of the prefrontal regions is more protracted. This leads to different sensitive exposure periods in the cerebral cortex. Like the amygdala, the cerebral cortex is highly sensitive to stress due to its high density of glucocorticoid receptors. Maltreatment-related alteration in this brain region has been reported in diverse psychiatric disorders such as schizophrenia and antisocial personality disorder, depression, anxiety, and somatization (Choi, Jeong, Rohan, Polcari, & Teicher, 2009).

The hippocampus is another limbic structure involved in the formation and retrieval of memories (Nadel, Campbell, & Ryan, 2007). Alterations in the hippocampus have been reported in various psychiatric disorders such as depression, borderline personality disorder, and post-traumatic stress disorder (Geuze, Vermetten, & Bremner, 2005). This brain structure also contains many glucocorticoid receptors, and it is therefore susceptible to damage from excessive levels of glucocorticoids. There is compelling evidence that adult survivors of child maltreatment have smaller hippocampi than non-maltreated adults. However, the relationship between the volume of the hippocampus and maltreatment is less clear in studies addressing children.

Taken together, these findings provide strong evidence that child maltreatment is associated with alterations in brain structures and functions. Further, the type of maltreatment might matter. Specific types of maltreatment seem to selectively target different brain areas, structures, and functions. For example, individuals who suffered from caregiver neglect show increased amygdala volumes, whereas the corpus callosum is most susceptible to neglect in males and sexual abuse in females. Since different types of maltreatment are associated with specific alterations in diverse brain structures and functions, the associated psychopathologies also vary (Teicher & Samson, 2016).

There is also evidence for differences in the sensitive exposure periods of different brain structures, such as the amygdala, prefrontal cortex, and hippocampus. Therefore, the age of the child when the maltreatment occurs may influence which alterations take place (Teicher &

Samson, 2016). In addition, a dose-response relationship has been found between severity of maltreatment and magnitude of structural and functional alterations (Dannlowski et al., 2012).

Gender differences have also been reported. For example, child maltreatment is associated with greater reduction in the corpus callosum in boys than in girls, and the hippocampus is more affected in males than in females (Herringa et al., 2013).

The interplay between child maltreatment, alterations in brain structures and functions, and psychiatric disorders is not fully understood. There is profound evidence that some brain alterations are associated with psychopathology; however, these alterations can also been found in resilient individuals with a maltreatment history. This may lead to the conclusion that brain alterations play an important role in psychopathology in maltreated individuals but that there might also be compensatory effects in resilient individuals (Teicher & Samson, 2016).

As we have seen, child maltreatment has an impact on the physiological stress response and activity of the HPA axis and on brain development. Recent research increasingly assumes epigenetic modifications to stress-regulating genes as another possible mechanism. The idea is that early environment has long-lasting effects on stress regulation at a genetic level by changing gene functions. Research in epigenetics can therefore elucidate possible mechanisms that explain the increased risk for physical and mental health problems in maltreated individuals (Cicchetti, Hetzel, Rogosch, Handley, & Toth, 2016).

Psychological mechanisms

Since the 1980s, researchers have proposed conceptual models to better understand the negative effects of child maltreatment, especially sexual abuse (Freeman & Morris, 2001; Hoier et al., 2013). Diverse psychological models have been proposed, including multiple dynamic models, psychodynamic models, developmental models (e.g. attachment theory; Bowlby, 1980), and models based on learning theories. Developmental models for example are based on the theory that child maltreatment interferes with ongoing development in diverse areas such as self-functioning and that this disruption in development might be manifested in clinical symptomology (Freeman & Morris, 2001). For an overview of conceptual models see Freeman & Morris (2001).

Although several psychological theories and models may explain the consequences of child maltreatment, the psychological mechanisms for which most evidence exists are included by learning theories such as the social learning theory and a cognitive-behavioural approach such as classical conditioning, and operant conditioning.

According to the social learning theory (Bandura, 1977), behaviour is learned via observation, imitation, and modelling. According to this theory, maltreated children learn to be abusive from their environment. This pattern of aggression is referred to as the cycle of violence (Widom & Maxfield, 2001). The cycle of violence suggests that maltreated children are predisposed to violence in adulthood. Children who suffered from maltreatment are more likely to be criminal or violent in later years.

Two basic learning processes that evoke responses are classical and operant conditioning. Both learning processes are typically included in explanations of consequences of traumatic events such as PTSD in adult survivors of child maltreatment. Classical conditioning theory states that neutral stimuli (e.g. bed) become associated with unconditioned stimuli (e.g. physical assault) of the maltreatment event and that this automatically evokes an unconditioned response (e.g. fear). Then the neutral stimuli become conditioned stimuli that elicit the same or similar conditioned responses. This means that for example cognitions, types of touching or simply the time of the day can trigger conditioned responses associated with the maltreatment. The conditioned cues that trigger conditioned responses are unique to each victim and depend on their maltreatment history. Short-term consequences can be explained by this theory, for example re-experiencing phenomena as reported in posttraumatic stress reactions (Freeman & Morris, 2001; Hoier et al., 2013).

In order to explain long-term consequences of child maltreatment, a second process must be taken into account. This process occurs when later behaviour is controlled by consequences. Operant conditioning suggests that negative reinforcement accounts for avoidance responses in the victim such as phobias, avoidance of trauma-related stimuli, drug and alcohol misuse, suicide, aggression, and other externalizing problem behaviours. In contrast, positive reinforcement is used to explain an increased likelihood of sexualized behaviour in the victim (Freeman & Morris, 2001).

Processes that maintain responses over time include generalization. Repeated maltreatment and multiple offenders can facilitate a generalization of responses across different settings. A generalization of conditioned stimuli can lead to problematic responses years after the maltreatment event. Additionally, cognitive processes may account for the continuity of these responses (Freeman & Morris, 2001; Hoier et al., 2013).

1.4 Prevention and Intervention

Given the high prevalence rates and severe consequences of child maltreatment, efforts to prevent child maltreatment and its consequences are crucial (Fang et al., 2012). Not only do the

maltreated children suffer; literature indicates that the negative outcomes are perpetuated into future generations. The consequences of child maltreatment are often chronic conditions and quite resistant to intervention efforts (McCoy & Keen, 2014). If child maltreatment can lead to epigenetic modifications to genes, prevention of child maltreatment and these modifications are essential. Taking into account the enormous direct and indirect costs of child maltreatment for public health, the importance of prevention efforts is obvious (Mikton & Butchart, 2009).

Prevention Model

In the area of maltreatment, we have the tendency to invest resources such as time and money in interventions only once a maltreatment event has occurred. This tendency is reinforced by the legal system and the fact that child protection agencies have few resources for families and children who are at increased risk. The consequence is that children have to suffer before resources are made available. However, there are also efforts to identify and address precursors of maltreatment risk (Stagner & Lansing, 2009).

Some problems arise in the prevention of child maltreatment. First, some of the targeted families have not had a maltreatment event before. Therefore, they are less likely to seek help because they are not aware that they might have a problem. Second, prevention programmes are often voluntary, and targeted families may not be willing to participate (McCoy & Keen, 2014).

Prevention models are generally divided into three levels of service (Leavell & Clark, 1953).

- Primary prevention is directed at the general population in order to reduce the incidence of new maltreatment cases. Public awareness campaigns and parent education programmes (e.g. the triple p program; Prinz, Sanders, Shapiro, Whitaker, & Lutzker, 2009) are examples of primary prevention towards public education with the goal of informing the general population about child maltreatment and how to react in suspected cases.
- Secondary prevention is a more selective approach. Programmes at this level target individuals or families in which maltreatment is more likely. Children or families that have one or more risk factors associated with child maltreatment (e.g. poverty, substance misuse, and young parents) are targeted with secondary prevention programmes. Parent support groups or home visiting programmes are examples of this kind of prevention programme (Knerr, Gardner, & Cluver, 2013).
- Tertiary prevention programmes target families in which maltreatment has already occurred. The aim is to reduce the negative consequences of the maltreatment and to prevent

revictimization. Mental health services such as psychotherapy or out-of-home care are examples of tertiary prevention. For an overview of intervention programmes and their effectiveness, see McMillan et al. (2009). Child protection agencies are involved when child maltreatment, neglect, or a child at risk is reported. After an assessment, interventions take place if needed at the second or third level of prevention (Thyen, Thiessen, & Heinsohn-Krug, 1995). Figure 2 provides an overview of these three levels of prevention according to Leavell and Clark (1953).

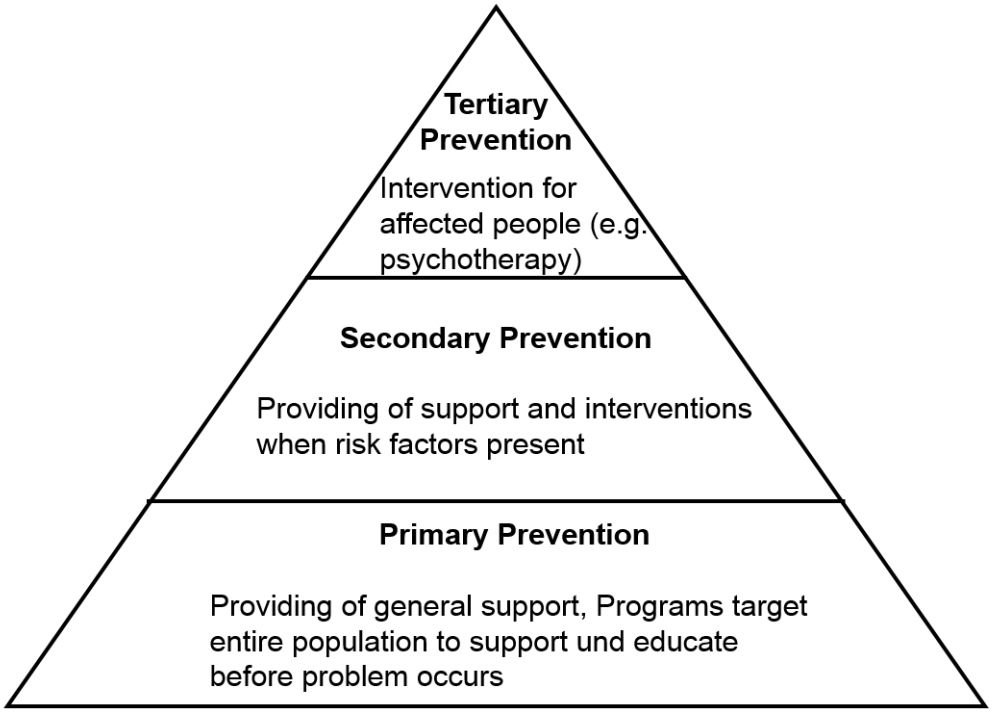

Figure 2. Levels of Prevention (based on Leavell & Clark, 1953)

Interventions on the third level of prevention

Clearly, primary and secondary prevention of child maltreatment is crucial. However, despite the efforts in this area, far too many children still suffer from diverse types of maltreatment. Therefore, interventions after child maltreatment are also important; these are located at the top of the prevention pyramid (third level of prevention). Interventions after child maltreatment include parent-training programmes, home-visiting programmes, therapeutic counselling, and foster care (MacMillan et al., 2009). Parent-training and home-visiting programmes only show inconclusive evidence for reducing reoccurrence of child maltreatment (Chen & Chan, 2016; MacMillan et al., 2009). Foster care can lead to benefits and better mental health outcomes for the affected child. There is strong evidence that cognitive-behavioural therapy improves a range of mental health

outcomes including post-traumatic stress disorder, anxiety and depression, and behavioural problems after child maltreatment (MacMillan et al., 2009; Skowron & Reinemann, 2005).

2 Health-related quality of life

In the last century, great improvements in medical techniques led to improved survival rates in severely injured individuals and persons with severe physical health conditions (Landolt & Sennhauser, 2007). However, the individual perception of the patient of his or her condition was neglected. In 1946, the World Health Organization stated that health is not merely the presence or absence of disease, but rather "… a state of complete physical, mental, and social well-being…" (World Health Organization, 1948). This definition proposes an individual perception of health, functioning, and well-being (Evans & Stoddart, 1990). In the 1970s, the concept of quality of life entered the social sciences. It assesses information that goes beyond a simple diagnosis of a disease (Bullinger, 2014; World Health Organization, 1997). The notion of "adding life to years and not just years to life" was becoming popular (Bullinger, Ravens-Sieberer, & Siegrist, 2000). Today, health-related quality of life (HrQoL) focuses on health-related areas as well as issues such as material security (Bullinger, 2014).

HrQoL is defined as "a multidimensional concept that includes the broad areas of functional status, psychological and social well-being, health perceptions and disease and treatment symptoms" (Aaronson et al., 1991; p. 840). Three dimensions are cross-culturally accepted to represent the core of the concept (see Figure 3): physical functions (physical symptoms), psychological functions (emotional state and cognitive functioning), and social functions (quality of relationships with family and peers; Landolt & Sennhauser, 2007). This construct is dynamic and changes during the course of life, during the course of disease, or with changing life circumstances (Landolt & Sennhauser, 2007).

In contrast to health or health status, which refers to the objective problems and limitations related to a disease, the concept of HrQoL includes the patient's subjective evaluation of problems, limitations, and possibilities. A relatively new construct, HrQoL has been investigated extensively in medical and psychological research since the 1990s (Centers for Disease Control and Prevention, 2011a).

2.1 Measurement of HrQoL in children

The idea behind the construct of HrQoL and its assessment is that the individual can best observe and report his or her own health and wellbeing. However, HrQoL assessment in paediatric population deserves special attention. Considerations about the age of the child, the informant (self or proxy), the modality of the assessment, and the instrument specificity are important.

A child's concepts of health and disease differ significantly from those of an adult (Bullinger, 2014). Depending on the child's stage of development, the dimensions of the HrQoL which are important at that time might differ from those of an adult. Whereas peers and school performance are important for an adolescent, opportunities to play and the relationship to the parents are more dominant in childhood. It is important to take the dynamic aspect of the definition into account. Further, children, especially young children, are not willing or able to answer long questionnaires. It is important to adapt a questionnaire to the capacities of a child and, if needed, replace written response options with pictures. Finally, one has to keep in mind that the developmental state of a child might not match the chronological age (Matza, Swensen, Flood, Secnik, & Leidy, 2004).

The concept of HrQoL is to reflect the subjective view of the individual. However, using self-reports in a paediatric population is not always feasible. Children, especially young children, might lack the language skills or cognitive abilities necessary to answer the questions. In this cases, proxy answers are the best alternative. Proxy ratings can be a valuable source of additional information to gather multiple perspectives (Eiser & Jenney, 2007). However, research has shown that the correlations between self- and proxy ratings of HrQoL are only small to moderate. It can therefore be concluded that proxy information on HrQoL of children is an important additional source of information but never interchangeable with the personal view of the individual.

There are many ways to let a participant complete a questionnaire. Paper-pencil is the most common way; however, electronic questionnaires are also effective. Further, the questions can be asked by an interviewer (Gerharz, Ravens-Sieberer, & Eiser, 1997). In a paediatric population, interviews are a good opportunity to guide the child through the questions and to increase the probability of obtaining an answer. However, social desirability and interviewer effects must be taken into account in these cases (R. E. Davis, Couper, Janz, Caldwell, & Resnicow, 2010).

Generally, generic instruments can be differentiated from disease-specific questionnaires. Some generic instruments frequently used to assess HrQoL in children are KIDSCREEN questionnaires (Ravens-Sieberer & The KIDSCREEN Groupe Europe, 2006). Generic instruments are designed to assess the construct in healthy and diseased populations. In this case, the scores can be compared among different groups. In contrast, disease-specific instruments are more sensitive to issues specific to a certain disease. However, these instruments do not permit comparisons between healthy and diseased groups. Other instruments offer the possibility to add disease-specific modules to a more generic instrument (e.g. DISABKIDS, DISABKIDS Group, 2006).

2.2 HrQoL in maltreated children

Figure 3 provides an overview of the dimensions of HrQoL in the field of child maltreatment, adapted from Landolt & Sennhauser (2007). The concept of HrQoL has become popular in clinical research related to child health, but studies on HrQoL in maltreated children are still rare. Most of them have investigated adult survivors of child maltreatment (Weber et al., 2015). Section B1 of this thesis reviews studies reporting HrQoL in maltreated children and adult survivors of child maltreatment. More studies have been published since then. One publication analysed HrQoL in maltreated adolescents in residential care (Greger, Myhre, Lydersen, & Jozefiak, 2016). The authors found reduced quality of life in these adolescents compared with control groups. In addition, Witt et al. (2016) found reduced quality of life in maltreated children. Children who experienced multiple types of maltreatment including sexual abuse showed significantly worse outcomes on psychopathology, level of functioning, and quality of life (Witt et al., 2016b).

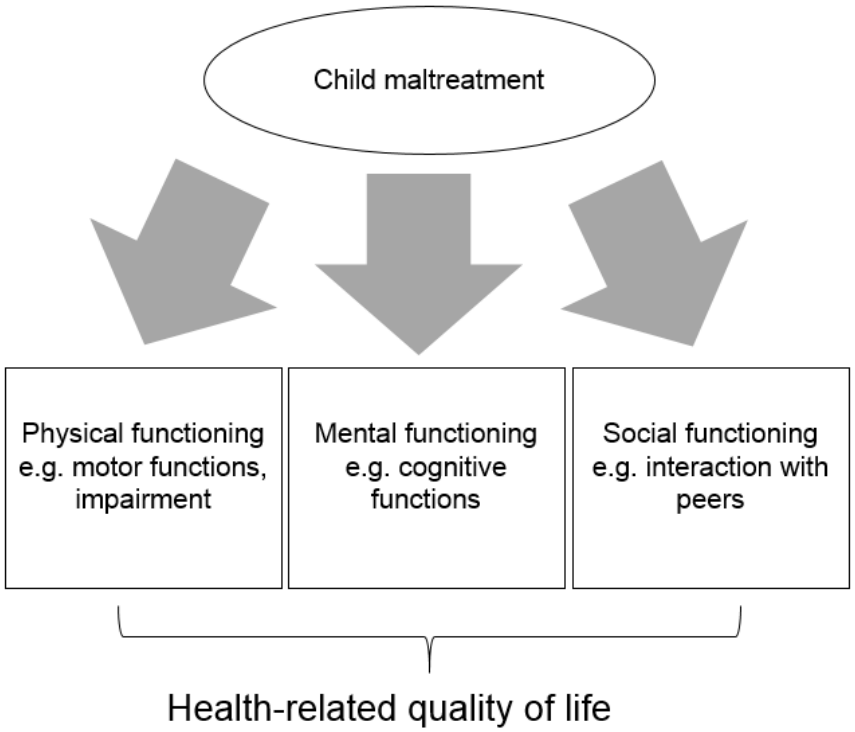

Figure 3. Dimensions of health-related quality of life in the field of child maltreatment, adapted from Landolt and Sennhauser (2007)

2.3 Summary

Many children suffer from maltreatment and must cope with diverse long-lasting consequences. In order to capture these consequences in a broader context, HrQoL is a good option to gather information on the burdens of maltreatment in the daily lives of the affected children. The construct of HrQoL provides information on the diverse life domains of a person, including physical aspects. It reflects daily life in a broader way than mental health. In the last decade, it has become clear that HrQoL is an important outcome variable besides medical or mental health outcome (Clarke & Eiser, 2004). In the field of child maltreatment, the concept of HrQoL has become an important instrument, as it adds a subjective component to objective, clinical measures (Peeters & Stiggelbout, 2010). Knowledge about impaired HrQoL domains in individuals after child maltreatment may highlight life domains that need to be addressed in interventions and can be used to support these individuals. Studies addressing HrQoL in maltreated children are still rare and needed. Both an overview of the current state of research and detailed knowledge of possible predictors of HrQoL are lacking. Further, if a child does not adjust well and struggles after maltreatment, psychotherapy is a good option to assess the need of these children. However, not much is known about psychotherapy referrals after child maltreatment. Are the children referred to psychotherapy those that most need help, or are other factors important? These questions are answered in the next section of this dissertation.

3 Overview of research questions and hypotheses

The objective underlying this dissertation project was to learn more about the relationship between child maltreatment and HrQoL, and psychotherapy referrals after CSV. The three research projects were characterized by (international) cooperation between the Children's Hospital in Zürich, Switzerland, the University Hospital in Ulm, Germany, and the Optimus Study Team in Switzerland. This cooperation was particularly valuable in gathering multiple perspectives from researchers at different centres and in enlarging the sample sizes and therefore ensuring an increased explanatory power. After the theoretical background about child maltreatment and HrQoL given in the first part of this dissertation, this section illuminates the background of each publication.

3.1 Research project I: Quality of life in maltreated children and adult survivors of child maltreatment: a systematic review

The aim of the first publication project was to systematically review the current state of research in the field of HrQoL in maltreated children and adult survivors of child maltreatment. Maltreatments included in the review were psychological maltreatment, physical maltreatment, sexual abuse, and neglect.

3.1.1 Questions and hypotheses

The first objective was to explore the association between child maltreatment and current HrQoL among maltreated children and adult survivors of child maltreatment. The second aim was to examine the association between the number of types of maltreatment that individuals have suffered and their HrQoL. The hypothesis was that there was a dose-response relationship between the number of maltreatment types and the HrQoL of the victim.

3.1.2 Methods

Systematic searches were conducted in March 2014. Databases for empirical studies and dissertations were searches using predefined keywords related to quality of life, child maltreatment, child abuse, and neglect in English and German. Because results were sparse, a second search was conducted that also included studies which assessed adult survivors of child maltreatment.

3.2 Research project II: Predictors on HrQoL in maltreated children

The objective of this project was to compare HrQoL in maltreated children with non-maltreated peers and to identify predictors of HrQoL in maltreated children and adolescents. The analysis was conducted as part of the CANMANAGE project in Germany (http://canmanage.de/wp/).

3.2.1 Questions and hypotheses

The first aim of this analysis was to compare HrQoL in maltreated children in the study population with the norm population of peers in Germany. We hypothesized that the study population would show lower scores in HrQoL than the norm population. The second objective was to identify possible predictors on HrQoL in maltreated children. We expected a number of factors to be negatively associated with the child's HrQoL: multiple maltreatment types, posttraumatic stress symptoms (PTSS) of the child, comorbid psychopathological conditions of the child, emotional and behavioural symptoms of the child, parents with more emotional reactions to the maltreatment event, parents with psychopathological conditions, parents with posttraumatic stress disorders (PTSD), migration background, and lower socioeconomic status. Further, we expected each type of maltreatment and multiple victimization to be negatively associated with the child's HrQoL.

3.2.2 Methods

Four clinics for child and adolescent psychiatry/psychotherapy in different German Federal States served as recruiting study sites for the German multi-site study CANMANAGE (Child Abuse and Neglect Case Management). The aim of CANMANAGE was to implement and evaluate managed mental healthcare for children and adolescents after maltreatment, abuse, or neglect. Data were collected between 2012 and 2015.

3.3 Research project III: Who is referred to psychotherapy after child sexual victimization in Switzerland

The purpose of the third project was to analyse the decision to refer sexually victimized children in Switzerland to psychotherapy on two levels, the case level and the contextual (agency) level.

3.3.1 Questions and hypotheses

The goal of this analysis was to identify factors associated with referral to psychotherapy after CSV, and to account for the relative effects of case-level and contextual-level factors. Potential predictors of psychotherapy referral were extracted from previous research on service referrals including age and gender of the child, migration background, and poverty.

3.3.2 Methods

The data for this analysis were drawn from the first nationally representative agency survey on reported CSV in Switzerland (www.optimusstudy.org). Over a 6-month data-collection period in 2010, child protective services, penal authorities and agencies in the health and social sectors documented incidents of CSV. Multilevel logistic regression was applied to analyse factors at both the case and contextual levels.

B: EMPIRICAL RESEARCH SECTION

1 Quality of life in maltreated children and adult survivors of child maltreatment: A systematic review

Reference: Weber, S., Jud, A., & Landolt, M. A. (2016). Quality of life in maltreated children and adult survivors of child maltreatment: a systematic review. *Quality of Life Research*, *25*(2), 237-255. DOI: 10.1007/s11136-015-1085-5.

1.1 Abstract

Purpose: To review data on health-related quality of life (HrQoL) in individuals with childhood trauma, including psychological maltreatment, physical maltreatment, sexual abuse, and neglect.

Methods: The literature search was conducted with predefined keywords using the following electronic bibliographic databases: EMBASE, PubMed, MEDLINE, CINAHL, PsyINFO, PSYNDEX, and Cochrane Database of Systematic Reviews. Further databases were searched for relevant dissertations. Study selection and data extraction were completed by two independent reviewers.

Results: The literature search yielded 1568 entries. Nineteen articles met all inclusion criteria and were retained for further analysis. Findings quite consistently showed significant negative associations between child maltreatment and both self- and proxy-rated HrQoL. Effect sizes range from small to large. Number of types of maltreatment and HrQoL were found to be negatively related.

Conclusion: Data on HrQoL for maltreated children are still rare. Studies often investigate adult survivors of child maltreatment. Considering HrQoL in children and adolescents who suffered maltreatment would allow the planning of effective interventions and the evaluation of treatments to improve HrQoL of these children.

1.2 Introduction

Child maltreatment is defined as ‘‘any act or series of acts of commission or omission by a parent or other caregiver that results in harm, potential for harm, or threat of harm to a child’’ (Leeb et al., 2008). It includes all types of physical abuse, sexual abuse, and psychological abuse (acts of commission), as well as physical neglect, emotional neglect, medical/dental neglect, educational neglect, inadequate supervision, and exposure to violent environments (acts of omission). Child maltreatment is more common in our society than we would like to admit, with several

studies reporting on its prevalence. However, in one international study involving six countries, large differences in the prevalence of diverse forms of child maltreatment were identified. The reported rates of shaking children, for example, ranged from 15 to 55 %, with a median value of 30 % (Runyan et al., 2009). An epidemiological study in Switzerland that solely investigated childhood sexual abuse found that 40.2 % of girls and 17.2 % of boys had experienced at least one form of sexual abuse during their childhood (Mohler-Kuo et al., 2014). And a recent review that examined prevalence rates for child maltreatment across different studies and different countries estimated combined prevalence rates for sexual abuse of 12.7 % (18 % among girls vs. 7.6 % in boys), with rates of 22.6 % for physical abuse, 36.3 % for emotional abuse, 16.3 % for physical neglect, and 18.4 % for emotional neglect (Stoltenborgh et al., 2015). It is generally accepted that child maltreatment has a potentially devastating impact on the physical and psychological well-being of children. However, there are also long-term economic consequences, including costs related to child welfare and in-hospital and mental health treatment, in addition to other long-term costs (Corso & Fertig, 2010; Fang et al., 2012). Previous research has also shown that traumatic stress associated with maltreatment can have severe negative effects on the development of the central nervous system (De Bellis & Keshavan, 2003). Furthermore, child maltreatment is associated with an increased risk of problems like substance abuse, depression, and high-risk sexual behaviours in adulthood (Gilbert, Widom, et al., 2009). Consequently, in recent years, researchers have become interested in child maltreatment and its effect on the quality of life of adult survivors. Quality of life is a relatively new construct that has been investigated extensively in medical and psychological research since the 1990s. (Centers for Disease Control and Prevention, 2011b). In this paper, we focus on health-related quality of life (HrQoL), which considers quality of life in the context of health and disease. HrQoL is defined as ‘‘a multidimensional concept that includes the broad areas of functional status, psychological and social well-being, health perceptions, and disease- and treatment- related symptoms’’ (Aaronson et al., 1991; p. 840). The three dimensions of HrQoL are physical function (physical symptoms), psychological function (emotional state and cognitive functioning), and social function (quality of relationships with family members and peers; Landolt & Sennhauser, 2007). Individuals who have suffered from child maltreatment must cope with long-lasting consequences that can affect their daily lives. For this reason, research in the field of HrQoL is needed to establish methods of prevention and intervention. A number of studies have investigated HrQoL among victims of child maltreatment, but a review of their findings is lacking. The aim of this paper is to fill this gap by reviewing data on HrQoL in individuals with a history of childhood trauma, including psychological maltreatment, physical maltreatment, sexual abuse, and neglect. First, we will explore the association between child maltreatment and current HrQoL

among maltreated children and adult survivors of child maltreatment. Second, we shall examine the association between the number of different types of maltreatment that individuals have suffered and their HrQoL. The possibility of a dose–response relationship between the number of maltreatment types and quality of life will be explored.

1.3 Methods

Data sources and search strategies

In March 2014, systematic searches were conducted in databases for empirical studies and dissertations using predefined keywords in English and German. The searches were conducted using the following electronic bibliographic databases: EMBASE, PubMed, MEDLINE, CINAHL, PsyINFO, PSYNDEX, and the Cochrane Database of Systematic Reviews. In addition, the databases ProQuest Digital Dissertation, NDLDT, and Dissonline.de were searched for relevant dissertations. All these databases were searched with keywords related to quality of life, child maltreatment, child abuse, and neglect. The Boolean operator ‘‘and’’ was used to link ‘‘quality of life’’ with ‘‘childhood’’ and different terms associated with child maltreatment (maltreatment, abuse, neglect, trauma, and violence). The search terms within the different terms associated with child maltreatment were combined with the operator ‘‘or.’’ The entire search algorithm therefore was: ‘‘quality of life’’ AND (maltreatment OR abuse OR neglect OR violence OR trauma) AND childhood. Considerable effort was devoted to finding the best search strategy. An initial search for studies which dealt entirely with maltreated or neglected children only yielded a few results. Consequently, studies which investigated adult survivors of child maltreatment were also included in this review. No limits were set with regard to the year of publication. The initial literature search yielded 1568 entries. In a second step, we checked reference lists in relevant articles and reviews and asked experts in the field whether they knew of any published or unpublished studies on this topic. This strategy resulted in an additional eight studies.

Study selection

The titles and abstracts of these articles were screened for eligibility by one of the authors (S.W.). Eligible publications were restricted to studies investigating HrQoL in maltreated children or adults who had experienced maltreatment during their childhood. Papers dealing with parts only of the construct of quality of life (e.g., psychological adjustment or health status) were excluded, as were studies that included children or adults with severe illnesses (e.g., HIV-positive individuals). After this initial screening, 27 articles and three dissertations remained. Hence, 30 full- text papers were reviewed. Inclusion and exclusion criteria (Figures. 4, 5) were independently rated by

two of the co- authors: A.J. and S.W. Disagreements were discussed verbally until a consensus was reached. Nineteen articles fitted all inclusion criteria and were retained for further analysis. These studies used a variety of terminology, including emotional abuse, psychological abuse, and psychological maltreatment. For the purposes of this review, the term ‘‘psychological maltreatment’’ shall be used (O’Hagan, 1995).

Diagnosis	Maltreatment, abuse or neglect in childhood
Outcome measure	Self, proxy or examiner’s report of *Quality of life*
Outcome assessment	Standardized
Design	Case control, cross-sectional, prospective, retrospective
Language of publication	English, German

Figure 4. Inclusion criteria study selection

Diagnosis	Current physical disease
Outcome measure	Parts of quality of life only (e.g. health status, psychosocial outcome)
Analysis	No basic descriptive statistics (e.g. mean)
Quality of reporting	Age at follow up missing, insufficient description of methods (e.g. outcome assessment), assessment of inclusion/exclusion criteria not possible

Figure 5. Exclusion criteria study selection

Data extraction and analysis

Two reviewers (M.A.L. and S.W.) independently extracted data on relevant outcomes, study design, and the sample. Effect sizes (Cohen’s d, corrected for small sample size with pooled standard deviations) were calculated, whenever possible, to compare the results of the different studies (Durlak, 2009), with all odds ratios also converted into Cohen’s d (Borenstein, Hedges, Higgins, & Rothstein, 2009). Standardized mean differences and 95 % confidence intervals were calculated. An effect size was deemed to be significant if its confidence interval did not include 0, working with the standard $p < 0.05$ level of significance. According to the literature, an effect size is considered large if Cohen’s d is ≥ 0.8, medium if $d \geq 0.5$ but < 0.08, and small if $d \geq 0.2$ but < 0.05 (Cohen, 1988). Effect sizes and confidence intervals were calculated for twelve studies (Afifi et al., 2007; Agorastos et al., 2014; Bonomi, Cannon, Anderson, Rivara, & Thompson, 2008; Chan, 2013; Draper et al., 2008; Gospodarevskaya, 2013; Jud, Landolt, Tatalias, Lach, & Lips, 2013; Nickel et al., 2004; Scigliano, 2008; Walker et al., 1999; Zafar et al., 2012; Zak, 2001). These studies were analysed separately for each type of maltreatment. The other seven studies (Al-Fayez, Ohaeri, & Gado, 2012; Corso, Edwards, Fang, & Mercy, 2008; Cuijpers et al., 2011; Dickinson, DeGruy, Dickinson, & Candib, 1999; Evren et al., 2011; Rikhye et al., 2008; Simon et al., 2009)

did not include the data necessary to calculate effect sizes, and unfortunately, the authors contact and asked to provide the required additional information failed to do so. The relevant results of these studies are therefore only included in the qualitative part of the review. Data were statistically pooled for studies investigating child sexual abuse (Afifi et al., 2007; Bonomi, Cannon, et al., 2008; Draper et al., 2008; Gospodarevskaya, 2013; Walker et al., 1999; Zak, 2001) and studies investigating child maltreatment in general and their relationship with HrQoL (Jud et al., 2013; Scigliano, 2008; Zafar et al., 2012). Not all studies could be included in the process of statistical pooling because necessary statistical information was lacking. The test of homogeneity revealed heterogeneous distributions (I^2 between 77.51 % and 88.08 %) for the studies that investigated child sexual abuse (Egger, Smith, & Altman, 2001). The usual way to handle such heterogeneous distributions is to split the data into subgroups (Higgins & Green, 2011); however, this was not possible due to the small numbers of studies that could be included in this review. Hence, meta-analytic calculations were impossible. The studies investigating child maltreatment in general and its relationship with HrQoL demonstrated a homogeneous distribution, but the confidence intervals for the effect sizes of two studies (Jud et al., 2013; Zafar et al., 2012) included 0 and were therefore nonsignificant.

Instruments to measure health-related quality of life

Different instruments are available for assessing HrQoL. They define HrQoL as a multidimensional construct and use different scales and subscales to access them. One of the most widely used is the Medical Outcomes Study 36-Item Short-Form Health Survey (SF-36; J. Anderson, Sullivan, & Usherwood, 1990) or its shorter version with 12 items (SF-12; Ware, Kosinski, & Keller, 1996). This measure assesses eight indicators of HrQoL, including physical function, role function, emotional role function, social function, pain, mental health, vitality, and health perception. Based upon these subscales, a physical component score and a mental component score can be calculated that represent mental and physical HrQoL, respectively. Another instrument used to assess HrQoL is the Assessment of Quality of Life Questionnaire (AQoL; Hawthorne, Richardson, & Osborne, 1999), which measures five dimensions: illness, independent living, social relationships, physical senses, and psychological well-being. A third instrument is the TNO-AZL Preschool Quality of Life Questionnaire (TAPQoL; Fekkes et al., 2000). This reliable and valid instrument measures the parent's perception of HrQoL in preschool children. The constructs measured in this questionnaire are physical functioning, social functioning, cognitive functioning, and emotional functioning, with twelve subscales included in total. Another well-known questionnaire that assesses HrQoL is the KIDSCREEN-27 Quality of Life Questionnaire; KIDSCREEN- 27;

(Ravens-Sieberer et al., 2007), an instrument that consists of 27 items that evaluate five dimensions of HrQoL: physical wellbeing, psychological well-being, parent relations and autonomy, social support and peers, and school environment. Yet another instrument is the Pediatric Quality of Life Inventory (PedsQL; Varni, Burwinkle, Seid, & Skarr, 2003) that has core scales for physical, emotional, social, and school functioning. The oldest instrument that is presented here is the Quality of Life Interview, Brief Version (QoLI; Lehman, 1995). The QoLI addresses recent life experiences in different life domains like living situation, family relations, social relations, daily activities, finances, safety and legal problems, work and school, and health. The instruments presented in the current analysis have all been used in the articles reviewed, and all conceptualize multidimensional HrQoL that encompasses health, psychological, and social dimensions.

1.4 Results

The studies included in this review were analysed in both a quantitative and qualitative manner. The main characteristics of the studies included in this review are shown in Table 3. Effect sizes and confidence intervals were calculated for twelve of the studies (Afifi et al., 2007; Agorastos et al., 2014; Bonomi, Cannon, et al., 2008; Chan, 2013; Draper et al., 2008; Gospodarevskaya, 2013; Jud et al., 2013; Nickel et al., 2004; Scigliano, 2008; Walker et al., 1999; Zafar et al., 2012; Zak, 2001). This quantitative component of our analysis is summarized in Table 4. Seven studies were not included in the quantitative analysis (Al-Fayez et al., 2012; Corso et al., 2008; Cuijpers et al., 2011; Dickinson et al., 1999; Evren et al., 2011; Rikhye et al., 2008; Simon et al., 2009). Their findings, however, often concurred with results from the statistically analysed studies and are reported qualitatively in the text. Both the findings of studies that have been compared statistically (see Table 4) and the findings of additional studies not included in the statistical analysis point to the same direction: They have identified negative (inverse) associations between the different types of child maltreatment (neglect, psychological maltreatment, physical maltreatment, and sexual abuse), the number of maltreatment types, and HrQoL.

Characteristics of the studies

All articles were published between 1999 and 2014 and written in English. Most of the studies were conducted in the USA; only four studies took place in Europe. All types of maltreatment are represented in the studies. Four studies only examined sexual abuse, but the rest examined more than one type of maltreatment. Many of the studies exhibited methodological limitations. One was the lack of information about the chronic health conditions of participants. Few of the

studies controlled for chronic conditions like HIV or diabetes. This is important, as chronic conditions have been shown to influence HrQoL (Hays et al., 2000).

General findings on child maltreatment and HrQoL

As shown in Table 4, eight studies examined associations between child maltreatment and HrQoL without distinguishing between different types of maltreatment (Al-Fayez et al., 2012; Chan, 2013; Corso et al., 2008; Jud et al., 2013; Rikhye et al., 2008; Scigliano, 2008; Simon et al., 2009; Zafar et al., 2012). The majority identified significant negative associations between child maltreatment and both self- and proxy-rated HrQoL. Effect sizes ranged from small to large, with some not statistically significant (Jud et al., 2013; Zafar et al., 2012). No systematic differences in the results were detected between adult and child studies. Four of these studies are included in the quantitative analysis summarized in Table 4 (Chan, 2013; Jud et al., 2013; Scigliano, 2008; Zak, 2001).

Findings on different types of child maltreatment and HrQoL

Neglect

As shown in Table 4, several studies discovered negative associations between childhood neglect and HrQoL (Afifi et al., 2007; Corso et al., 2008; Cuijpers et al., 2011; Evren et al., 2011). The effect size for the mental component score (SF-36) in one study was moderate (d = -0.5) if controlled for sociodemographic variables. If the authors additionally controlled for psychiatric disorders and psychiatric comorbidity, however, the effect size decreased (d = -0.26; Afifi et al., 2007). Interestingly, two studies reported partially contrary results. Corso et al. (2008) found that emotional neglect in childhood had the strongest influence on current HrQoL across all investigated ages, while physical neglect during childhood did not impact HrQoL. The second study found that emotional neglect and physical neglect failed to predict HrQoL (Evren et al., 2011). Additionally, one study only investigated men (Evren et al., 2011). One of these studies was included in the quantitative analysis shown in Table 4 (Afifi et al., 2007).

Psychological maltreatment

Available studies have consistently identified a significant adverse effect of child psychological maltreatment on current HrQoL (Afifi et al., 2007; Cuijpers et al., 2011; Evren et al., 2011). However, effect sizes (Afifi et al., 2007) were small (d = -0.46 for mental component score and d = -0.25 for physical component score). If psychiatric disorders were also controlled for, the effect sizes were reduced to minimal (d = -0.18 for both the mental and physical component scores).

Again, one study only investigated men (Evren et al., 2011), and only one study was included in the quantitative analysis, again shown in Table 4 (Afifi et al., 2007).

Physical maltreatment

Studies investigating samples with a history of child physical maltreatment identified significant negative effects on HrQoL (Afifi et al., 2007; Bonomi, Cannon, et al., 2008; Draper et al., 2008; Evren et al., 2011). Effect sizes were calculated for three of the studies (Afifi et al., 2007; Bonomi, Cannon, et al., 2008; Draper et al., 2008) and all were small, with Cohen's d between -0.10 and -0.47. Two studies were restricted to subjects of a single gender (Bonomi, Cannon, et al., 2008; Evren et al., 2011). Three studies were analysed quantitatively (Afifi et al., 2007; Bonomi, Cannon, et al., 2008; Draper et al., 2008).

Sexual abuse

As listed in Table 3, several studies investigated the relationship between child sexual abuse and HrQoL (Afifi et al., 2007; Bonomi, Cannon, et al., 2008; Dickinson et al., 1999; Draper et al., 2008; Evren et al., 2011; Gospodarevskaya, 2013; Nickel et al., 2004; Walker et al., 1999; Zak, 2001), all identifying significant inverse associations between child sexual abuse and current HrQoL. Calculated effect sizes were generally small ($d \leq -0.37$). Only one study, which used the AQoL Questionnaire, detected a moderate effect ($d = -0.75$; Gospodarevskaya, 2013). It is important to mention that five of these studies only considered subjects of the same sex in their examination (Bonomi, Cannon, et al., 2008; Dickinson et al., 1999; Evren et al., 2011; Walker et al., 1999; Zak, 2001). Seven of these studies were included in quantitative analysis and are listed in Table 4 (Afifi et al., 2007; Bonomi, Cannon, et al., 2008; Draper et al., 2008; Gospodarevskaya, 2013; Nickel et al., 2004; Walker et al., 1999; Zak, 2001).

Findings on multiple-type child maltreatment

All studies investigating the relationship between the number of maltreatment types experienced and HrQoL detected an inverse association (Afifi et al., 2007; Agorastos et al., 2014; Bonomi, Cannon, et al., 2008; Simon et al., 2009; Walker et al., 1999), with effect sizes increasing as the number of types of maltreatment increased (Table 4). Notably, all of these studies investigated adults only. Studies with children did not examine a potential association between the number of maltreatment types or events and HrQoL. Three of these studies only considered subjects of a single gender (Agorastos et al., 2014; Bonomi, Cannon, et al., 2008; Walker et al., 1999). Four

of these studies were included in quantitative analysis (Afifi et al., 2007; Agorastos et al., 2014; Bonomi, Cannon, et al., 2008; Walker et al., 1999).

Table 3. Main characteristics of the reviewed studies

Author	Publication year	Origin	Number of participants	Age range	Type of sample	Type of maltreatment	Outcome variables	Predictor variables
Afifi, T.O., Enns, M.W., Cox, B.J., de Graaf, R., ten Have, M. & Sareen, J.	2007	Netherlands	7076 (♀ 49.4%)	18-64	Population sample	sexual abuse, physical abuse, psychological abuse, neglect	SF-36	Childhood abuse/ No. types of abuse
Agorastos, A., Aversa, L.H., Pittman, J., Goldsmith, A., Nievergelt, C., Hansen, C.J. & Baker, D.G.	2014	USA	1254 (no ♀)	18-43 (M=21.5; SD=2.4)	Military sample	emotional abuse; physical abuse; sexual abuse; emotional neglect; physical neglect	SF-12	CTQ
Al Fayez, G.A, Ohaeri, J.U. & Gado, O.M.	2012	Kuwait	4467 (♀ 51.4%)	14-23 (M = = 16.9; SD = 1.2)	Population sample	physical abuse, psychological abuse, and sexual abuse	WHOQOL-Bref	Lifetime and 12-month prevalence using standard scales (modifications of the questionnaires by Briere and Runtz (for physical and psychological abuse), and MacMillan et al. (for sexual abuse))
Bonomi, A.E. Cannon, E.A., Anderson, M.L., Rivara, F.P. & Thompson, R.S.	2008	USA	3568 (♀ 100%)	18–64	Clinical sample	physical abuse and/or sexual abuse	SF-36	Two questions from the Behavioral Risk Factor Surveillance System
Chan, K.L.	2013	China	18341 (♀ 46.7%)	15-17 (M = =15.9; SD=0.1)	Population sample	conventional crime; child maltreatment; peer and sibling victimization; sexual victimization; and witnessing of, or indirect, victimization	Chinese version of SF-12	JVQ
Corso, P.S., Edwards, V.J., Fang, X. & Mercy, J.A.	2008	USA	6168 (2812 with abuse history; ♀ 53%)	19->70	Clincal sample	physical abuse, sexual abuse, emotional abuse, physical neglect, and emotional neglect	SF–6D preference-based scoring algorithm	Own questionnaire
Cuijpers, P., Smit, F., Unger, F., Stikkelbroek, Y., ten Have, M. & de Graaf, F.	2011	Netherlands	7076 (♀ 49.7%)	18-65 (M = = 41.2; SD = 11.9)	Population sample	physical abuse, psychological abuse, sexual abuse and emotional neglect	DW	Own questionnaire
Dickinson, L., deGruy III, F.V., Dickinson, W.P. & Candib, L.M.	1999	USA	252(104 onset in childhood; 18 onset in adulthood; ♀ 100%)	21-80 (M = 47; SD = 14)	Clinical sample	sexual abuse	SF-36	Russell's questionnaire

Draper, B., Pfaff, J.J., Pirkis, J., Snowdon, J., Lautenschlager, N.T. & Wilson, I. & Almeida, O.P.	2008	Australia	21819 (physical abuse)/ 21822 (sexual abuse) /21755 (both types of abuse)	≥ 60 years (M = 71.9; SD= 7.7)	Clinical sample	physical and sexual abuse	SF-12	Own questionnaire
Evren, C., Sar, V., Dalbudak, E., Cetin, R., Durkaya, M., Evren, B. & Celik, S.	2011	Turkey	156 (alcohol dependent men)	34-54 (M = 45.26; SD = 9.53)	Clinical sample	emotional neglect, physical neglect, emotional abuse, physical abuse, sexual abuse	SF-36	CTQ
Gospodarevskaya, E.	2013	Australia	993 (82 sexually abused)	16-21	Clinical sample	sexual abuse	AQoL	Pre-defined variable
Jud, A., Landolt, M.A., Tatalias, A., Lach, L.M. & Lips, U.	2013	Switzerland	78	6–16.5	Clinical sample	physical abuse, sexual abuse, psychological maltreatment or neglect	KIDSCREEN-27 & TAPQOL	Life Events Skala
Nickel, M. K., Tritt, K., Mitterlehner, F.O., Leiberich, P., Nickel, C., Lahmann, C., Forthuber, P., Rother, W.K. & Loew, T.H.	2004	Germany	936 inpatients (250 sexual abused)	M = 41.0 (SD= 2.5)	Clinical sample	sexual abuse	SEL	
Rikhye,K., Tyrka, A.R., Kelly, M.M., Gagne Jr., G.G., Mello, A.F., Mello, M.F., Price, L.H. & Carpenter, L.L.	2008	USA	141 (72 maltreated)	18–65	Population sample	emotional abuse, physical abuse, sexual abuse, emotional neglect, physical neglect	Q-LES-Q	CTQ
Scigliano, C. E.	2008	USA	500 (290 childhood trauma)	18-90 (M = 42.58; SD = 15.46)	Clinical sample	emotional abuse, physical abuse, sexual abuse, emotional neglect, phyisical neglect	• CDC • Six subscales of the SF-20	CTQ-7
Simon, N.M., Herlands, N.N., Marks, E.H., Mancini, C., Letamendi, A., Li, Z., Pollack, M.H., Van Ameringen, M. & Stein, M.B.	2009	USA	103 (72 with abuse or neglect in history)	M = 36.69 (SD=14.1)	Clinical sample	sexual abuse, physical abuse, physical neglect, emotional abuse, emotional neglect	Q-LES-Q	CTQ
Walker, E.A., Gelfand, A., Katon, W.J., Koss, M.P., Von Korff, M., Bernstein, D. & Russo, J.	1999	USA	1225 (221 sexual abuse, 306 other than sexual abuse, 698 no abuse)	M = 42 (SD= 12)	Clinical sample	sexual abuse and other typ of abuse	SF-36	CTQ
Zafar, M., Kashikar-Zuck, S.M., Slater, S.K., Allen, J.R., Barnett, K.A., LeCates, S.L., Kabbouche, M.A., Hershey, A.D. & Powers, S.W.	2012	USA	122 (8 with abuse, 114 with no abuse)	10-17	Clinical sample	abuse vs. no abuse	PedsQL	The Kiddie-Schedule for Affective Disorders and Schizophrenia

Zak, E.N.	2001	USA	221(18 abuse history)	23-79 (M = 46.78; SD = 11.53)	Military sample	sexual abuse	QOLI	Own screening questionnaire

Abbreviations: SF-36 (Medical Outcomes Study 36- Item Short-Form Health Survey), SF-12 (Short version of Medical Outcomes Study 36- Item Short-Form Health Survey), WHOQOL-Bref (WHO Quality of Life Instrument), CTQ (Childhood Trauma Questionnaire), JVQ (The Chinese version of the Juvenile Victimization Questionnaire), DW (inverse of the health related quality of life (SF-36)), AQol (Assessment of Quality of Life Questionnaire), KIDSCREEN-27 (Kidscreen-27 Quality of Life Questionnaire), TAPQOL (TNO-AZL Preschool Quality of Life Questionnaire), SEL (Skalen zur Erfassung der Lebensqualität; engl: Scale for Survey of Quality of Life), Q-LES-Q (Quality of Life Enjoyment and Satisfaction Questionnaire), CDC (number of healthy days), CTQ-7 (Seven items from the Childhood Trauma Questionnaire), PedsQL (Pediatric Quality of Life Inventory), QOLI (Quality of Life Interview, Brief Version).

Table 4. Outcomes in the reviewed studies

Reference	Instrument	Number/Typ of maltreatment	Subscale	Controlled for	ES[a]: Cohen's d*	CI of d lo-wer	CI of d up-per	sign.
Afifi et al., 2007	SF-36	neglect	Mental component score	sociodemographic variables	-0.50	-0.56	-0.45	*
			Physical component score		-0.14	-0.19	-0.08	*
		psychological abuse	Mental component score		-0.46	-0.54	-0.39	*
			Physical component score		-0.25	-0.32	-0.18	*
		physical abuse	Mental component score		-0.35	-0.43	-0.26	*
			Physical component score		-0.21	-0.30	-0.12	*
		sexual abuse	Mental component score		-0.35	-0.44	-0.26	*
			Physical component score		-0.21	-0.30	-0.12	*
	SF-36	neglect	Mental component score	sociodemographic variables, psychiatric disorders & psychiatric comorbidity	-0.26	-0.32	-0.21	*
			Physical component score		-0.08	-0.14	-0.03	*
		psychological abuse	Mental component score		-0.18	-0.25	-0.11	*
			Physical component score		-0.18	-0.25	-0.11	*
		physical abuse	Mental component score		-0.10	-0.19	-0.02	*
			Physical component score		-0.15	-0.24	-0.06	*
		sexual abuse	Mental component score		-0.10	-0.19	-0.01	*
			Physical component score		-0.15	-0.24	-0.06	*
	SF-36	neglect	Mental component score	sociodemographic variables, Axis I mental disorders, psychiatric comorbidity, and (log) number of physical health conditions	-0.25	-0.31	-0.20	*
			Physical component score		-0.05	-0.11	0.00	ns
		psychological abuse	Mental component score		-0.17	-0.24	-0.10	*
			Physical component score		-0.13	-0.20	-0.06	*
		physical abuse	Mental component score		-0.10	-0.19	-0.01	*
			Physical component score		-0.12	-0.21	-0.03	*
		sexual abuse	Mental component score		-0.10	-0.19	-0.01	ns
			Physical component score		-0.09	-0.18	0.00	ns
		1 type of abuse	Mental component score	sociodemographic variables	-0.39	-0.45	-0.33	*
			Physical component score		-0.10	-0.16	-0.04	*
		2 type of abuse	Mental component score		-0.54	-0.54	-0.45	*
			Physical component score		-0.14	-0.15	-0.05	*
		3 types of abuse	Mental component score		-0.55	-0.67	-0.44	*
			Physical component score		-0.29	-0.41	-0.18	*
		4 types of abuse	Mental component score		-0.63	-0.83	-0.43	*
			Physical component score		-0.45	-0.65	-0.25	*

		1 type of abuse	Mental component score	sociodemographic variables, psychiatric disorders & psychiatric comorbidity	-0.26	-0.32	-0.19	*
			Physical component score		-0.08	-0.14	-0.01	*
		2 type of abuse	Mental component score		-0.30	-0.30	-0.21	*
			Physical component score		-0.09	-0.10	0.00	ns
		3 types of abuse	Mental component score		-0.20	-0.31	-0.08	*
			Physical component score		-0.21	-0.33	-0.10	*
		4 types of abuse	Mental component score		-0.13	-0.33	0.07	ns
			Physical component score		-0.36	-0.56	-0.16	*
		1 type of abuse	Mental component score	sociodemographic variables, Axis I mental disorders, psychiatric comorbidity, and (log) number of physical health conditions	-0.25	-0.32	-0.19	*
			Physical component score		-0.04	-0.10	0.02	ns
		2 type of abuse	Mental component score		-0.30	-0.30	-0.20	*
			Physical component score		-0.05	-0.05	0.04	ns
		3 types of abuse	Mental component score		-0.19	-0.31	-0.08	*
			Physical component score		-0.15	-0.26	-0.03	*
		4 types of abuse	Mental component score		-0.12	-0.32	0.08	ns
			Physical component score		-0.28	-0.48	-0.08	*
Agorastos et al., 2014	SF-12 (MCS and PCS total score below median score of the assessed population)	One Childhood Trauma	Poor mental health		0.20	0.06	0.34	*
			Poor physical health		0.07	-0.07	0.22	ns
		Multiple Childhood Trauma	Poor mental health		0.46	0.32	0.59	*
			Poor physical health		0.20	0.06	0.33	*
Bonomi et al., 2008	SF-36	physical abuse	Mental summary score	unadjusted	-0.35	-0.48	-0.21	n.a.
			Physical summary score		-0.20	-0.33	-0.06	n.a.
			Subscales					n.a.
			Role emotional		-0.37	-0.50	-0.23	n.a.
			Vitality		-0.36	-0.49	-0.22	n.a.
			Mental health		-0.41	-0.55	-0.27	n.a.
			Social functioning		-0.35	-0.49	-0.22	n.a.
								n.a.
	SF-36	sexual abuse	Mental summary score	unadjusted	-0.20	-0.29	-0.12	n.a.
			Physical summary score		-0.14	-0.22	-0.05	n.a.
			Subscales					n.a.
			Role emotional		-0.21	-0.29	-0.12	n.a.
			Vitality		-0.21	-0.29	-0.12	n.a.
			Mental health		-0.26	-0.34	-0.17	n.a.
			Social functioning		-0.20	-0.28	-0.11	n.a.
								n.a.
	SF-36	physical and sexual abuse	Mental summary score	unadjusted	-0.39	-0.53	-0.26	n.a.
			Physical summary score		-0.42	-0.55	-0.29	n.a.
			Subscales					n.a.
			Role emotional		-0.38	-0.51	-0.25	n.a.
			Vitality		-0.49	-0.62	-0.36	n.a.
			Mental health		-0.49	-0.63	-0.36	n.a.

			Social functioning	-0.56	-0.70	-0.43	n.a.
Chan et al., 2013[b]	SF-12	Childhood abuse	Mental component score	-0.01	n.a.	n.a.	*
			Physical component score	-0.03	n.a.	n.a.	*
Draper et al., 2008	SF-12	physical abuse	Physical component score	-0.20	-0.25	-0.14	n.a.
			Mental component score	-0.47	-0.53	-0.42	n.a.
		sexual abuse	Physical component score	-0.18	-0.23	-0.12	n.a.
			Mental component score	-0.35	-0.40	-0.29	n.a.
		any abuse	Physical component score	-0.17	-0.21	-0.12	n.a.
			Mental component score	-0.39	-0.43	-0.34	n.a.
Gospoda-revskaya, 2013[b]	AQoL	Sexual abuse	QOL	-0.75	-0.97	-0.52	n.a.
Jud et al., 2013[b]	TAPQOL	Childhood abuse	Physical function-ning	-0.59	-1.53	0.36	ns
			Cognitive function-ning	0.03	-0.84	0.91	ns
			Social functionning	-0.48	-1.42	0.46	ns
			Emotional function-ning	-1.18	-2.12	-0.23	*
			Total	-0.53	-1.42	0.36	ns
	KIDSCREEN-27 self-rated	Childhood abuse	Physical well-being	0.17	-0.42	0.77	ns
			Psychological well-being	-0.07	-0.66	0.52	ns
			Autonomy and pa-rent relation	-0.80	-1.43	-0.17	*
			Peers and social support	-0.54	-1.14	0.06	ns
			School environment	-0.70	-1.31	-0.10	*
			Total score	-0.53	-1.14	0.07	ns
	KIDSCREEN-27 proxy-ra-ted	Childhood abuse	Physical well-being	0.73	0.04	1.43	ns
			Psychological well-being	-0.18	-0.85	0.49	ns
			Autonomy and pa-rent relation	-0.18	-0.90	0.53	ns
			Peers and social support	-0.13	-0.80	0.54	ns
			School environment	0.72	0.03	1.41	ns
			Total score	0.20	-0.47	0.88	ns
			HRQOL-proxy (all ages)	-0.14	-0.68	0.39	ns
Nickel et al., 2004	Scale for Sur-vey of Quality of Life, Survey of Life Satis-faction, Exis-tential Orientation Scale, Leipzig Incidence and Psychological Stress Ques-tionnaire,	sexual abuse	Decreased concent-ration	0.89	0.67	1.10	*
			Burnt out feeling	0.82	0.62	1.02	*
			Difficulties coopera-ting	0.52	0.25	0.79	*
			Difficulties dealing with the public	0.63	0.37	0.89	*
			Handicapped in re-creation	0.89	0.69	1.09	*
			Handicapped in social activities	0.89	0.68	1.10	*
			Handicapped in career	0.85	0.65	1.05	*

	and Questionnaire for Life Story and Partnership		Handicapped in family	0.78	0.57	0.99	*
			Handicapped in sexuality	0.90	0.70	1.10	*
			Perceived themselves as a burden	0.62	0.36	0.88	*
			Less satisfactory life	0.54	0.25	0.84	*
			Change of residence	0.72	0.46	0.98	*
	Scale for Survey of Quality of Life, Survey for Collection of Health Behaviour Data, Leipzig Incidence and Psychological Stress Questionnaire, Giessen Complaint Survey, and Questionnaire for Life Story and Partnership	sexual abuse	Pain in abdomen	0.76	0.55	0.97	*
			Pain in rectum	0.64	0.27	1.00	*
			Pain in arms and legs	0.58	0.35	0.80	*
			Don't like to be touched	0.80	0.60	1.00	*
			Dissatisfied with their appearances	0.77	0.56	0.99	*
			Dissatisfied with sexual characteristics	0.70	0.46	0.93	*
			Tended to conceal their body	0.71	0.50	0.92	*
			Corporeality impeded contact with others	0.59	0.34	0.83	*
			Menstrual complains	1.15	0.89	1.42	*
			Feeling of losing control	1.20	0.96	1.45	*
			Abuse of appetite suppressants	0.70	-0.44	1.85	ns
			Abuse of laxatives	0.43	-0.25	1.10	ns
			Abuse of illicit drugs	0.46	-0.21	1.12	ns
			Abuse of psychopharmaca	0.54	0.09	0.99	*
Scigliano, 2008	General HRQOL (Healthy Days) measured by number of healthy days (CDC, 2000)	childhood trauma	Healthy days	-0.20	-0.38	-0.01	*
Walker et al., 1999	SF-36	Sexual maltreatment	Physical function	-0.33	-0.49	-0.17	n.a.
			Role function	-0.38	-0.54	-0.22	n.a.
			Emotional role function	-0.30	-0.47	-0.14	n.a.
			Social function	-0.49	-0.65	-0.32	n.a.
			Pain	-0.46	-0.62	-0.30	n.a.
			Mental health	-0.47	-0.63	-0.31	n.a.
			Vitality	-0.40	-0.56	-0.24	n.a.
			Health perception	-0.44	-0.61	-0.28	n.a.
			Physical component score	-0.37	-0.54	-0.21	*
			Mental component score	-0.36	-0.52	-0.20	*
	SF-36	Nonsexual maltreatment	Physical function	-0.19	-0.34	-0.05	n.a.
			Role function	-0.18	-0.32	-0.04	n.a.
			Emotional role function	-0.20	-0.34	-0.05	n.a.
			Social function	-0.39	-0.53	-0.24	n.a.
			Pain	-0.20	-0.35	-0.06	n.a.
			Mental health	-0.41	-0.55	-0.27	n.a.
			Vitality	-0.25	-0.39	-0.11	n.a.

			Health perception	-0.39	-0.53	-0.24	n.a.
			Physical component score	-0.12	-0.27	0.02	ns
			Mental component score	-0.18	-0.32	-0.04	*
Zafar et al., 2012[b]	PedsQL	abuse	PedsQL total score self-report (0-100)	-0.66	-1.38	0.07	ns
			Physical functioning	-0.19	-0.91	0.53	ns
			Emotional function-ing	-0.72	-1.45	0.00	ns
			Social functioning	-0.78	-1.50	-0.05	n.a.
			School functioning	-0.71	-1.43	0.01	ns
			Psychosocial func-tioning	-0.84	-1.57	-0.12	n.a.
			PedsQL Parent Proxy total score	-0.80	-1.52	-0.08	n.a.
			Physical functioning	-0.30	-1.02	0.42	ns
			Emotional function-ing	-1.08	-1.81	-0.35	n.a.
			Social functioning	-0.63	-1.35	0.09	ns
			School functioning	-0.83	-1.55	-0.11	n.a.
			Psychosocial func-tioning	-0.88	-1.60	-0.15	n.a.
Zak et al., 2001	QOLI	Child sexual trauma		0.08	-0.43	0.59	ns

[a]: A positive value means that the maltreated individuals scored higher than the control group. A negative value means that the maltreated individuals scored lower than the control group.

[b] Children included in study.

Abbreviations: SF-36 (Medical Outcomes Study 36- Item Short-Form Health Survey), SF-12 (Short version of Medical Outcomes Study 36- Item Short-Form Health Survey), AQol (Assessment of Quality of Life Questionnaire), TAPQOL (TNO-AZL Preschool Quality of Life Questionnaire), KIDSCREEN-27 (Kidscreen-27 Quality of Life Questionnaire), PedsQL (Pediatric Quality of Life Inventory), QOLI (Quality of Life Interview, Brief Version).

1.5 Discussion

The underlying objective of this paper was to review the current research on HrQoL in both maltreated children and adult survivors of child maltreatment. A systematic literature research was conducted, followed by a standardized selection process. Nineteen studies met our inclusion criteria. Despite differences in methodology, all these studies had adequately sized samples and they generally achieved high response rates. Even though some studies investigated children and others assessed adults, we observed no systematic differences in the results between these studies.

Findings on HrQoL

Our first specific aim was to explore the relationship between child maltreatment and HrQoL. All included studies examined this relationship and found that these two variables were inversely (negatively) correlated. Effect sizes ranged from small to large, with some statistically significant and others not (Afifi et al., 2007; Jud et al., 2013; Zafar et al., 2012). In summary, we identified robust and consistent evidence of an inverse relationship between child maltreatment and current HrQoL in both maltreated children and adult survivors of child maltreatment.

Findings on the number of maltreatment subtypes

Our second aim was to examine associations between the number of different types of maltreatment and HrQoL. What we identified were dose–response relationships (Simon et al., 2009; Walker et al., 1999), with HrQoL falling proportional to both the number of different types of maltreatment and to the number of maltreatment events. For three studies, effect sizes were calculated (Afifi et al., 2007; Agorastos et al., 2014; Bonomi, Cannon, et al., 2008), with some of these effect sizes small and statistically nonsignificant (Afifi et al., 2007; Agorastos et al., 2014). Nevertheless, there again appears to be robust and consistent data, suggesting a significant additive effect of different maltreatment types on HrQoL. We must note that these studies all assessed adult survivors of child maltreatment rather than children. In one study (Afifi et al., 2007), the results were statistically significant, but this significance was partially lost after the authors adjusted for psychiatric disorders and psychiatric comorbidity. This indicates that other factors, like psychiatric disorders, may influence HrQoL. However, any assumption that mental disorders were independent of childhood events of maltreatment must be considered questionable, as it is certainly possible that maltreatment during childhood can influence a person's risk or severity of future mental disorders (Filipas & Ullman, 2006; Teicher et al., 2003).

Neurobiological mechanisms might explain the dose– response relationship noted above. For example, there is compelling evidence that child maltreatment in any form (physical, sexual or emotional maltreatment, or neglect) can induce permanent changes in brain development (Twardosz & Lutzker, 2010). The genesis of synapses seems to be influenced by early adverse experiences in life. Maltreatment experiences during early development might force the brain to adapt, thereby hindering the establishment of new functions or structures (Cicchetti, 2002). Major brain alterations have been documented to occur in the corpus callosum, lateral ventricles, and amygdala (C. M. Anderson, Teicher, Polcari, & Renshaw, 2002; De Bellis et al., 1999; Mehta et al., 2009; Teicher et al., 2004). These changes may lead to significant impairment in affected individuals, including psychiatric disorders (Belsky & de Haan, 2011; Teicher et al., 2003). Another possible explanation for our findings is that children who suffer maltreatment might learn maladaptive ways of coping with life experiences. This, in turn, could influence the way they see themselves and their surroundings, and that might impact how they deal with adult relationships (Berliner & Wheeler, 1987; Filipas & Ullman, 2006). The social problems that individuals with a history of maltreatment during childhood have could also explain our finding that the more different types of maltreatment someone suffers during childhood, the more severely their HrQoL is reduced. Other models have been proposed to explain the effects of child maltreatment, including sexual maltreatment, on negative outcomes (Freeman & Morris, 2001).

Strengths and limitations of this review

This review was conducted following PRISMA guidelines (Moher, Liberati, Tetzlaff, & Altman, 2009). We searched several different databases, after which we checked reference lists and contacted experts in the field to uncover additional studies, some of which were unpublished. Studies were selected, and data extracted by two independent reviewers to minimize the risk of bias. To compare the studies, effect sizes and confidence intervals were calculated whenever possible. One weakness of our review is that meta-analysis was not possible. One meta- analysis was attempted, in that we pooled all data on general child maltreatment and childhood sexual abuse. However, the test of homogeneity demonstrated heterogeneous distribution of data in the sexual abuse subgroup, so that it was impossible to split the studies into subgroups to address this heterogeneity, because of the small sample size in each subgroup.

Our review also identified methodological limitations within the studies themselves. First, selection bias was a common risk, because only five studies recruited a population sample (Afifi et al., 2007; Al-Fayez et al., 2012; Chan, 2013; Cuijpers et al., 2011; Rikhye et al., 2008), the remainder enrolling either clinical (Bonomi, Cannon, et al., 2008; Corso et al., 2008; Dickinson et al., 1999; Draper et al., 2008; Evren et al., 2011; Gospodarevskaya, 2013; Jud et al., 2013; Nickel et al., 2004; Scigliano, 2008; Simon et al., 2009; Walker et al., 1999; Zafar et al., 2012) or military (Agorastos et al., 2014; Zak, 2001) samples. One effect of this selection bias is that minorities might have been underrepresented. A second limitation we commonly observed was a failure for investigators to control for significant life events, like divorce and chronic physical disease. Third, the quality of reporting was poor in some studies, and some of the authors of these studies failed to provide additional information and data upon request. Fourth, most of the studies relied on self-reported rather than objectively confirmed data. For example, no study used hospital records to confirm child maltreatment. Fifth, most studies focused exclusively on adult survivors of child maltreatment, the exceptions being just five studies that assessed HrQoL in maltreated children. Consequently, some of the studies included in this review present data on child maltreatment that were collected retrospectively among adult survivors of childhood maltreatment. This renders any comparison of child and adult studies worthy of caution, because the construct of HrQoL in children is not quite the same as in adulthood. Moreover, some study participants were almost 90 years old, meaning that more than 70 years had passed since their maltreatment as a child. The extreme variability in the duration of time between childhood trauma and study data collection means that there was likely extreme and yet indeterminate variability in the strength of recall bias. For example, one would expect that recall bias would be less between children asked directly about recent past maltreatment and older adults recalling events that occurred numerous decades earlier, but

how much less can only be speculated. On the other hand, children also might repress hurtful memories and fail to remember earlier events, or they may feel fearful about speaking out against their parents or other authority figures who have mistreated them. A final limitation of most of the studies we analysed is that they were cross-sectional, so causality could not be inferred.

Suggestions for future research

Based upon our findings, several suggestions for future research can be made. First, it will be important to investigate the aftermath of child maltreatment longitudinally to assess any causal role it might have on future outcomes. Second, most of the studies included in this review investigated adult survivors of child maltreatment, and children also need to be assessed directly. Furthermore, no study investigated preschool children. Third, it will be important to investigate other risk factors for decreased HrQoL in individuals with a history of child maltreatment. Possible risk and protective factors that should be assessed include parental well-being and the child's cognitive resources, as they could influence the child's development after a maltreatment event. One study, for example, surveyed the socioeconomic status of families (Jud et al., 2013), since low socioeconomic status is a known risk factor for child maltreatment (Trickett, Carlson, Aber, & Cicchetti, 1991). Fourth, many studies used self-reported data on child maltreatment instead of medical or legal records, and such self-reported events of maltreatment are likely to be influenced by the victims' memory of the event or personal preconceptions (Friedman, 1976). On the other hand, using medical records alone may also pose problems, because only the most serious cases of child maltreatment are likely to be thus documented. To circumvent the limitations inherent with both approaches, both self-reports and medical reports should be assessed simultaneously to optimize the accuracy of data collection. Fifth, the severity and number of different types of maltreatment should be assessed more thoroughly in future studies. As the current review indicates, there seems to be an inverse dose–response relationship between number of types of maltreatment a person has suffered and their subsequent quality of life. Additionally, there is evidence supporting the concept that sensitive periods exist during brain development, during which different kinds of maltreatment exert the biggest impact (Andersen et al., 2008). Sixth, child maltreatment is quite prevalent in Western societies, but quality-of-life research in this field is still relatively sparse. While some studies have been done on child sexual abuse and its relationship with HrQoL, research on the effects of other types of child maltreatment, like neglect, on HrQoL remains lacking, even though, for instance, child neglect is the most common form of child maltreatment in the USA (U.S. Department of Health and Human Services Administration on Children, Youth and Families, Children's Bureau, 2012).

Conclusions

Over the past 15 years, there has been growing interest in health-related quality-of-life research among victims of child maltreatment. Published studies indicate impaired HrQoL in affected individuals. However, because most of these studies had methodological limitations, robust conclusions regarding causality cannot yet be drawn. Further research to assess HrQoL among victims of childhood maltreatment will be of vital importance to enhance the development of effective interventions to prevent life-long impairment and disability.

1.6 Acknowledgments

This research was funded by the Perspectives Foundation, SwissLife, the Anna Mueller Grocholski Foundation the Olga Mayenfisch Foundation, and the Swiss Foundation for the Health of Children and Adolescents. We want to thank the following researchers who provided us with additional information about their published data (in alphabetical order): Agorastos Agorastos, Oswaldo Almeida, and Brian Draper.

2 Predictors of health-related quality of life in maltreated children and adolescents

Reference: Weber, S., Jud, A. Landolt, M.A., & Goldbeck, L. (in press). Predictors of health-related quality of life in maltreated children and adolescents. *Quality of life research.*

DOI: 10.1007/s11136-017-1615-4

2.1 Abstract

Purpose: Research on the consequences of child maltreatment has primarily focused on behavior and mental health; the children's overall well-being has not received the same attention. A number of studies have investigated health-related quality of life (HrQoL) among victims of child maltreatment, but there is still a lack of knowledge about predictors of HrQoL in maltreated children and adolescents. This study seeks to bridge the gap by drawing data from the German multisite study CANMANAGE (Child Abuse and Neglect Case-Management).

Methods: Parents or caregivers of 350 children and adolescents completed a proxy-version of the Kidscreen-10-Index, a multidimensional instrument measuring child HrQoL. An additional 249 children age 8 years and older completed a self-report version. Multiple regression analyses were performed to identify potential predictors for both self- and proxy-rated HrQoL.

Results: Comparisons with the reference group revealed a significantly lower mean proxy-rated HrQoL, the self-rated HrQoL of the study sample was not significantly impaired. Predictors of impaired self-reported HrQoL were older age, self-reported posttraumatic stress symptoms (PTSS), and self-reported emotional and behavioral symptoms. Predictors of impaired proxy-reported HrQoL again were older age, self-reported PTSS and emotional and behavioral symptoms in the child/adolescent, as reported by the caregiver, as well as low socioeconomic status. Multivariate analysis explained 20% and 38% of the variability in self-reported and proxy-rated HrQoL, respectively.

Conclusions: It is important to treat PTSS and emotional and behavioral symptoms in maltreated children, as these two phenomena are strong cross-sectional predictors of a child's HrQoL. Trauma-focused cognitive behavioral therapies are one possible option to address the needs of such children.

2.2 Introduction

Maltreatment is one of the most traumatic events a child or adolescent can experience. It is a global problem, which is believed to affect millions of children worldwide. One review examined prevalence rates for child maltreatment across the globe and estimated combined prevalence rates for sexual abuse of 12.7% (18% among girls vs. 7.6% in boys), 22.6% for physical abuse, 36.3% for emotional abuse, 16.3% for physical neglect, and 18.4% for emotional neglect (Stoltenborgh et al., 2015). In a significant number of these children, the consequences are diverse and may persist into adulthood, including such sequelae as substance abuse, depression and high-risk sexual behaviors (Dube, Felitti, Dong, Chapman, Giles & Anda, 2003; Edwards, Holden, Anda & Felitti, 2003; Hillis, Anda, Felitti & Marchbanks, 2001)

Research on the long-term effects has primarily focused on behavior and mental health. The child's overall well-being has not been granted the same level of attention. It has therefore been suggested that health research should find a way to operationalize an individual's well-being and functioning as *health-related quality of life* (HrQoL; Bullinger, 2014). HrQoL can be defined as ''a multidimensional concept that includes the broad areas of functional status, psychological and social well-being, health perceptions, and disease- and treatment related symptoms'' (Aaronson et al, 1991; p. 840).

In contrast to the broader constructs of "well-being" or "quality of life", HrQoL is a well-defined construct and reflects an individual's performance in daily life in a broader way than mental health assessments or behavioural instruments. HrQoL can capture information beyond mental and physical health problems when used as an outcome measure of child maltreatment. Furthermore, HrQoL enriches research on maltreated children by adding the children's individual perspective on their well-being instead of being restricted to externally rated parameters of the child's health status. Previous research has shown that impaired HrQoL is associated with other, more serious negative outcomes, like hospitalization and death, in several disease-specific populations, (Kalantar-Zadeh, Kopple, Block & Humphreys, 2001; Li, Chang, Hsu, Lu & Fang, 2013; Sehlen, Marten-Mittag, Herschbach et al., 2012; Zuluaga, Guallar-Castillon, Lopez-Garcia et al., 2010) as well as in the general population (Ul-Haq, Mackay & Pell, 2014). Few studies have focused on HrQoL and its predictors in maltreated children (Weber et al., 2015), and those that have been published in this area have primarily only investigated adult survivors. Two studies identified impaired HrQoL in maltreated children (Jud et al., 2013; Greger et al., 2016), however, no studies have focused on preschool children (Weber et al., 2015). In summary, there is still a striking lack of knowledge about HrQoL in maltreated children and adolescents, or about factors linked to poor or diminished HrQoL.

The overall objective of this study was to identify predictors of HrQoL in maltreated children and adolescents. Potential predictors were selected and grouped in accordance with the transactional trauma adjustment model, proposed by Landolt (Landolt, 2003), that is based on transactional stress theory (Lazarus, 1974) The transactional trauma adjustment model describes adaption to a trauma as an active interaction between characteristics of the trauma, the child, and the social context. These are assumed to predict posttraumatic adaptation (Landolt, 2012). Adaptation to child maltreatment and the potentially-associated level of HrQoL could follow similar mechanisms. The model was chosen as a means to assign potential predictors of HrQoL and group them analogically.

Factors related to maltreatment have been considered to exert important influences on HrQoL among maltreated children and adolescents (Afifi et al, 2007; Agorastos et al., 2014; Corso et al., 2008). Previous research has found that all types of child maltreatment are negatively associated with HrQoL. However, the literature also contains controversial results on neglect (Weber et al., 2005). For example, one study found that neglect in childhood was the strongest predictor on current HrQoL in adults (Corso et al., 2008) where as another found that neglect failed to predict HrQoL in adults (Evren et al., 2011). An inverse relationship between the number of maltreatment forms that someone has experienced and their level of HrQoL has been reported in earlier studies (Afifi et al., 2007, Agorastos et al., 2014; Witt, Münzer, Ganser, Fegert, Goldbeck & Plener 2016b).

Characteristics of the child and their associations with HrQoL have already been addressed in research. In this study, we focus on three different characteristics of the maltreated child: symptoms of posttraumatic stress (PTSS), co-morbidity with other psychopathological conditions, and emotional and behavioral symptoms. A well-studied consequence of child maltreatment is posttraumatic stress disorder (PTSD). Previous research has addressed the relationship between child maltreatment, PTSD and HrQoL (Agorastos et al., 2014; Evren et al., 2011), indicating a negative association between PTSD and HrQoL in adult survivors of childhood maltreatment. The relationship between PTSD and HrQoL in maltreated children, during childhood, has not yet been assessed. The relationship between co-morbidity with psychopathological conditions and HrQoL in maltreated children also has not yet been empirically assessed. However, previous studies have detected an inverse relationship between medical co-morbidities and physical HrQoL in adults (Fenn, Bauer, Alshuler, Evans, Williford, Kilbourne et al., 2005) and an inverse association between co-morbid psychopathological conditions and psychosocial functioning in children (Johnco, Salloum, Lewin, McBride & Storch, 2015; Franco, Saavedra & Silverman, 2007). Also addressed in previous research has been a child's emotional and behavioral symptoms and their relationship

with HrQoL, again identifying an inverse relationship (Rajmil, Palacio-Vieira, Herdman, López-Aguilà, Villalonga-Olives, Valderas et al., 2009). However, this same association has not been evaluated in maltreated children.

In accordance with the transactional trauma adjustment model, factors concerning the social environment are addressed as a third group of variables. These factors focus on a child's relationship network. Great importance is assigned to parents (Jud et al., 2013). The association between parental factors and child variables has been investigated in earlier research, indicating a positive association between psychopathological conditions, especially PTSD, in the child and parents (de Vries, Kassam-Adams, Cnaan, Sherman-Slate, Gallagher & Winston, 1999; Morris, Gabert-Quillen & Delahanty, 2012). In addition, parental appraisal processes appear to influence a child's development and progress after a traumatic event (Stuber, Kazak, Meeske, Barakat, Guthrie, Garnier, et al, 1997). However, variables relating to parental PTSD, psychopathological conditions, and their emotional reactions to a maltreatment event, as an approximation of parental appraisal processes, have not yet been included in research analyzing the relationship between a child's maltreatment and HrQoL. Additional factors like household socioeconomic status (SES; Jud et al, 2013; Mielck, Vogelmann & Leidl, 2014) and an immigrant background (Flink, Beirens, Looman, Landgraf, Tiemeier, Mol et al., 2013; Puder, Pinto, Bonvin, Bodenman, Munsch, Kriemler & Marques-Vidal, 2013; Villalonga-Olives, von Steinbüchel, Witte, Kawachi & Kiese-Himmel, 2014) might have an association with the HrQoL among maltreated children and adolescents: children in low SES households and those in migrant families tend to exhibit decreased HrQoL.

The first aim of this study was to compare HrQoL in a cohort of maltreated children versus the normative population. Consistent with previously-published research, we hypothesized that our study cohort would report lower HrQoL scores than normal.

The second aim was to identify potential predictors of HrQoL in maltreated children. Characteristics that we anticipated might impact a maltreated child's HrQoL included: having been exposed to multiple different forms of maltreatment; the type of maltreatment; PTSS; co-morbid psychopathological conditions and emotional and behavioral symptoms in the child; more pronounced emotional reaction to the child's maltreatment event, psychopathological conditions, and PTSD in the parents; and an immigrant background and lower socioeconomic status in the family.

2.3 Materials and Methods

Participants and procedures

Four child and adolescent psychiatry/psychotherapy clinics in different German Federal States served as recruiting study sites for the multi-center German study called CANMANAGE (Child Abuse and Neglect Case-Management). The aim of CANMANGE was to implement and evaluate managed mental healthcare for children and adolescents who have suffered some form of maltreatment, abuse or neglect. Inclusion criteria were a history of exposure to maltreatment, and a current age at the time of assessment of between 4 and 18 years. As a further requirement, the child had to be in a safe living environment at the time of assessment, and a non-abusing caregiver had to participate. Data were collected between 2012 and 2015. Children with a maltreatment history who were clients of child welfare institutions or of mental health services were referred to one of the study centers. Potential participants were contacted by study coordinators, informed about the study, and invited to enroll. Participants received an inducement of 20€ for taking part (Witt et al., 2016b). For further information about recruitment, consent process and assessment see Witt et al. (2016a; 2016b). Children and adolescents with severe physical or mental disabilities were excluded from this analyses (n=6) because their HrQoL score might be confounded by the disability (Lindström & Eriksson, 1993; Sabaz, Cairns, Lawson, Bleasel & Bye, 2001). Parents/caregivers of 350 children and adolescents (aged 4 to 18) completed a proxy version of the Kidscreen-10 Index. Additionally, a subsample of 249 children and adolescents 8 years old and older filled in a self-report version. Self-rated and proxy-rated HrQoL were analysed separately.

Gender and age at the time of assessment were also included in the analysis as possible confounders of HrQoL in children and adolescents (Goldbeck, Schmitz, Besier, Herschbach & Henrich, 2007; Michel, Bisegger, Fuhr & Abel, 2009). To assess variability in the duration of time between child maltreatment and study data collection, the time since the maltreatment event also was entered as a possible confounding variable. If there was more than one maltreatment event, the child was asked about the subjectively-perceived worst event. Demographic, psychological and behavioral characteristics of the proxy-reported and self-reported sample populations are summarized in Table 5.

Table 5. *Characteristics of the samples*

	Self-rated health-related quality of life (n= 249)			Proxy-rated health-related quality of life (n=350)		
	n or *M*	% or SD	Range	n or *M*	% or SD	Range
Gender (female)	110	44.2		152	43.4	
Age at assessment (years)	11.9	2.5	8 to 18	10.3	3.5	4 to 18
Out-of-home care	86	34.2		117	33.4	
Immigrant background	79	31.7		114	32.6	
Single caregiver	86	34.5		128	36.6	
Household income (Euros)						
< 500	7	2.8		11	3.1	
500 to 999	27	10.8		38	10.9	
1000 to 1999	66	26.5		100	28.6	
2000 to 2999	50	20.1		63	18	
3000 to 3999	28	11.2		39	11.1	
4000 to 4999	20	8		28	8	
> 5000	12	4.8		16	4.6	
Form of maltreatment						
physical	187	75.1		250	71.4	
emotional	132	53		173	49.4	
sexual	99	39.8		133	38	
neglect	139	55.8		198	56.6	
multiple forms	182	73.1		249	71.1	
Time since event	3.3	2.9	0 to 17.4	2.9	2.7	0 to 17.4
Child/adolescent PTSS (proxy rated)						
conspicuous	118	47.4		154	44	
Child/adolescent PTSS (self rated)						
conspicuous	125	50.2		126	36	
Child's mental health						
no ICD-10 diagnosis	77	30.7		110	31.4	
1 ICD-10 diagnosis	89	35.5		132	37.7	
2 ICD-10 diagnoses	63	25.3		83	23.7	
> 2 ICD-10 diagnoses	20	8		25	7.1	
Child's emotional and behavioural symptoms (self rated)						
conspicuous	95	38.2		95	27.1	

Child's emotional and behavioural symptoms (proxy rated)						
conspicuous	126	50.6		173	49.4	
Parent's emotional reaction	41.4	15.2	15-75	41.6	15.7	15-75
Parent's health						
depression	31	12.4		43	12.3	
panic	19	7.6		26	7.4	
some somatic sydrome	43	17.3		61	17.4	
Parent's PTBS						
yes	42	16.9		57	16.3	
HrQoL	48.7	12.5		46.3	11.5	

Measures

Kidscreen-10 Index

The outcome variable health-related quality of life was assessed in this sample of children and adolescents using the Kidscreen-10 Index (Ravens-Sieberer et al., 2010). The Kidscreen-10 Index is a widely-used, well-standardized measure of HrQoL with good psychometric properties (Ravens-Sieberer et al., 2010) and was used in several clinical studies with maltreated children before (e.g. Jud et al., 2013;Grip, Almqvist, Axberg & Broberg, 2014; Jernbro, Tindberg, Lucas & Janson, 2015). The questionnaire consists of 10 items and yields scores for a unidimensional global HrQoL index, which adequately represents the longer versions of the Kidscreen questionnaires (Ravens-Sieberer et al., 2010).

The 10 items address affective symptoms, cognitive symptoms, psycho-vegetative aspects of vitality, energy and feeling well, and psychosocial aspects, such as the ability to experience fun with peers or getting along well at school. For each item, five answer categories ranging from “not at all” to “extremely” or from “never” to “always” were provided. Internal consistencies are acceptable, with a Cronbach’s alpha among self-reports of $\alpha = 0.80$ and among proxy reports of $\alpha = 0.79$. The Kidscreen Group Cronbach’s alpha provide European norm data on children and adolescents age 8-18 (self report and proxy report; Ravens-Sieberer et al., 2006). These were used to compare HrQoL in this study sample with the European norm data.

Assessment of maltreatment-related factors

Juvenile Victimization Questionnaire (JVQ)

Data on victimization exposure was obtained using an adapted version of the Juvenile Victimization Questionnaire in German (JVQ; Finkelhor et al., 2005). The original version of this instrument (JVQ; Hamby, Finkelhor, Ormrod & Turner, 2004) exhibited good psychometric properties (Cronbach's α = .80; Finkelhor, Ormrod, Turner & Hamby, 2005). The scales used in this study were questions on physical, psychological and emotional maltreatment, neglect and sexual abuse. The different forms of maltreatment and the number of different forms of maltreatment reported for each given subject were included in analysis (parent/caregiver report).

Assessment of child-related factors

University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index (UCLA PTSD RI)

In this study, posttraumatic stress symptoms (PTSS) of the maltreated children were assessed using the University of California at Los Angeles Posttraumatic Stress Disorder Reaction Index (UCLA PTSD RI; Steinberg, Bryner, Decker & Pynoos, 2004). Internal consistency across the three versions (for adolescents, children and parents) has been found to be approximately .90 (Steinberg et al., 2004). The questionnaire for children (8-12 years old) consists of 22 items, asking about frequencies of the 17 DSM-IV PTSS in the preceding month. The questionnaire for adolescents (13-18) and for parents/caregivers consists of 21 items. The instrument's psychometric properties are good to excellent (Steinberg et al., 2004; Steinberg, Brymer, Kim, Briggs, Ippen, Ostrowski et al., 2013). Total scores for the children and adolescents were aggregated to create a single total score. A total score ≥ 25 was considered as conspicuous and considered suggestive of a diagnosis of PTSD (Hofbeck 2010).

Schedule of affective disorders and schizophrenia for school-age children (K-SADS-PL)

We operationalized co-morbidity as the number of different psychopathological diagnoses. Parents and children were asked about the child's lifetime (present and past) DSM-IV disorders, using the German version of the "Schedule of affective disorders and schizophrenia for school-age children" (K-SADS-PL; Delmo, Weiffenbach, Gabriel & Poustka, 2000), a reliable and valid instrument developed to provide psychiatric diagnoses in children (Cronbach's α = .63–1.00; Delmo et al., 2000). All current psychopathological diagnoses, per ICD-10 criteria, were determined, and their number recorded. All children older than 8 years were interviewed. Additionally,

the parents were interviewed using the proxy version. The K-SADS-PL is administered by interviewing the parent(s), the child, and finally achieving summary ratings which include *both* sources of information. When there are discrepancies between different sources of information, the rater will have to use his/her best clinical judgment. This means, for children older than 8 years, the information obtained from parents and the child were summarized. In cases where the child was younger than 8 years, only the information from the parents were obtained

Strengths and Difficulties Questionnaire (SDQ)

To examine emotional and behavioral symptoms, the Strengths and Difficulties Questionnaire (SDQ; Goodman 1997) was used. This is a brief behavioral screening questionnaire with satisfactory psychometric properties (Cronbach's α = .73; Goodman, 2001). It provides parental and self reports on a child's emotional and behavioral symptoms. The questionnaire consists of 25 items that incorporate five scales: emotional symptoms, conduct problems, hyperactivity/inattention, peer relationship problems, and pro-social behaviors. All items are scored on a three point scale with 0 = not true, 1 = somewhat true, and 2 = certainly true. Higher scores indicate more problems, except in the pro-social behavior dimension. A total difficulties score ranging from 0 (no problems) to 40 (maximal problems) was generated, aggregating scores from the scales for emotional symptoms, conduct problems, hyperactivity/inattention and peer relationship problems. Using cut-off values provided by the developer of the SDQ (Goodman, 1997), a total sum score between 17 and 40 for the proxy report, or between 20 and 40 for the self report was considered an abnormal value. Children more than 11 years old completed this questionnaire, as did all parents or caregivers using the proxy-report instrument**.**

Assessment of social context-related factors

Parents Emotional Reactions Questionnaire (PERQ-D)

The Parents Emotional Reactions Questionnaire (PERQ-D; Cohen & Mannarino, 1996) assesses the emotional reactions of parents after their child has suffered sexual abuse. This 15-item questionnaire examines reactions like anxiety and anger on 5-point scales. The measure yields a total PERQ-D score with good psychometric properties (Cronbach's α = .87; Cohen & Mannarino, 1996b; Cohen & Mannarino, 2000). The higher the total score is, the more serious the reaction. We adapted the instrument to assess the reaction of parents to diverse types of maltreatment by asking the parents about their reaction to their children's stressful experiences such as neglect, physical, emotional and/or sexual maltreatment as well as intimate partner violence.

Patient Health Questionnaire (PHQ-D)

The short version of the Patient Health Questionnaire (PHQ-D; Löwe, Spitzer, Zipfel & Herzog, 2002) is a 15-item self-report questionnaire, which assesses depressive and panic disorders. Additionally, somatic disorders (as a part of the full version) were recorded. The psychometric properties of the short version are good (Gräfe, Zipfel, Herzog & Löwe, 2004). Using cut-off values provided by the developer of the German version of the questionnaire (Löwe et al., 2002), parents were examined for possible panic or somatic disorders or depression.

Posttraumatic stress diagnostic scale (PDS)

The posttraumatic stress diagnostic scale (PDS; Foa, 1995) is a self-report questionnaire which registers PTSD as well as PTSS. In this study, a German version was used for the parents, which has good psychometric properties (Cronbach's α = .94; Griesel, Wessa & Flor, 2006). Using cut-off values provided by the questionnaire developer (Foa, 1995), the parents were examined for PTSD.

Socio-demographic information

Socio- demographic variables were assessed using a self-developed questionnaire, adapted from the "Studie zur Gesundheit von Kindern und Jugendlichen in Deutschland" (KIGGS; Ravens-Sieberer & Kurth, 2008) and the "German Socio-Economic Panel Study" (SOEP; Wagner, Frick & Schupp, 2007). The questionnaire was completed by the accompanying parent or caregiver. As an approximation for socioeconomic status (SES), the household income was divided by the square root of household size (Square root scale; OECD, 2008; 2011).

Statistical analysis

All statistical analysis was performed using the statistical software package SPSS, version 22.0 for Windows (IBM, 2013).

T-tests were used to compare the sample means and the population norms. Afterwards, linear regression models were created using the outcome variable Kidscreen-10 Index total score, key explanatory variables and potential confounders determined *a priori*. In accordance with the transactional trauma adjustment model (Landolt, 2003), three types of independent variable were analysed: variables relating to the maltreatment event, variables relating to the maltreated child, and variables relating to the environment (parents/caregivers) of the child.

Both the self- and proxy- ratings of each child's HrQoL were entered as continuous variables. Two independent multiple regression analyses were performed to identify the association

between potential predictors and either the self- or proxy-rated HrQoL. Variables were entered into the regression analysis in blocks. Demographic variables and variables concerning the child were entered first, followed by characteristics of the maltreatment, followed by parent/caregiver-related variables. All predictor variables were either continuous or binomial (dummy variables). Assumptions of the multiple regression were tested according to the literature (Field, 2009). All analyses were two-sided and a value of $p < 0.05$ was considered statistically significant.

2.4 Results

Descriptive data on the study sample, as well as means and SDs for the Kidscreen-10 scores (self- and proxy-rated) are summarized in Table 5. The sample was not equally distributed by gender, with boys over-represented. More than 70% of the children and adolescents had experienced multiple forms of maltreatment, and roughly 30% reported having an immigrant background.

Comparisons with the reference group (Ravens-Sieberer et al., 2006) revealed a significantly lower mean proxy-rated HrQoL (M = 46.3; SD = 11.5; t (349) = -6.00, $p < 0.001$); however, the effect size was small (Cohen's d = 0.37; Cohen, 1988). The self-rated HrQoL of the study sample (M = 48.7, SD = 12.5) was not significantly impaired relative to the reference group (t (248) = -1.58, $p = 0.12$). Child and parent ratings were only weakly correlated ($r = 0.40$, $p < 0.001$). All assumptions of the multiple regression analysis have been met. Table 6 summarizes statistics for the multiple regression analysis models that evaluated the relationship between children's self- and proxy-rated HrQoL and the selected variables. There were three significant predictors of impaired self-rated HrQoL: older age, self-reported posttraumatic stress symptoms (PTSS), and self-reported emotional and behavioral symptoms. As for proxy-rated HrQoL, older age, self-reported PTSS and emotional and behavioral symptoms of the child/adolescent, as reported by the caregiver, again were statistically linked to impaired HrQoL. One additional environmental factor that predicted a lower HrQoL score was SES, with a low household SES directly associated with impaired proxy-rated HrQoL among children and adolescents. No other variables contributed significantly to predicting proxy-rated HrQoL. Multivariate analysis explained 20% and 38% of the variability in self-reported and proxy-rated HrQoL, respectively.

Table 6. *Regression analysis predicting health-related quality of life*

	self-rated (n=249)		proxy-rated (n=350)	
Characteristics	Δ R^2	β	Δ R^2	β
Block 1: Child characteristics	0.32***		0.41***	
age of the child (at assessment)		-0.22 *		-0.26 ***
female gender		-0.03		0.01
self-reported Posttraumatic Stress symptoms		-0.45 **		-0.33 **
proxy-rated Posttraumatic Stress symptoms		0.10		-0.19
number of psychopathological diagnoses		-0.04		-0.04
self-reported emotional and behavioural symptoms		-0.33 **		-0.10
proxy-rated emotional and behavioural symptoms		-0.06		-0.39 ***
Block 2: Maltreatment characteristics	0.02		0.03	
physical maltreatment		0.06		0.02
emotional maltreatment		-0.06		-0.05
sexual abuse		0.02		0.02
neglect		0.16		0.02
multiple forms maltreatment		-0.06		0.12
time since worst event		-0.01		-0.05
Block 3: Social characteristics	0.01		0.05	
parents‘ emotional reactions		0.06		0.11
parents‘ psychopathological symptoms				
Depression		0.07		0.07
Panic		-0.02		-0.05
Somatic Syndrome		-0.01		-0.13
parent with PTSD		-0.13		-0.01
immigrant background		-0.01		-0.05
socioeconomic status		-0.04		0.20 **
single caregiver		0.00		0.00
out-of-home placement		-0.01		-0.01
Total R^2	0.36		0.49	
Total R^2 adjusted	0.20		0.38	

*p≤ .05, **p≤.01, ***p≤.001

Δ R^2 Change in multiple regression coefficient; β standardized regression coefficient.

2.5 Discussion

The underlying objectives of this paper were first, to compare HrQoL in a study cohort of maltreated children against the normal population; and second, to identify predictors of HrQoL in these children.

The first initial hypothesis that HrQoL in maltreated children and adolescents is decreased relative to their peers in the norm population was confirmed. However, in this study, this was true only for the proxy-rated HrQoL. Children themselves did not rate their HrQoL as impaired. Second, we identified predictors of HrQoL in maltreated children: Predictors of impaired self-reported

HrQoL were older age, self-reported posttraumatic stress symptoms (PTSS), and self-reported emotional and behavioral symptoms. Predictors of impaired proxy-reported HrQoL again were older age, self-reported PTSS and emotional and behavioral symptoms in the child/adolescent, as reported by the caregiver, as well as low socioeconomic status.

The finding that that only proxy-rated HrQoL in maltreated children and adolescents is decreased relative to their peers in the norm population contradicts the findings of other investigators who uncovered impaired self-reported HrQoL in maltreated children (Greger et al., 2016), but unaffected HrQoL when rated by caregivers (Jud et al, 2013). One possible explanation for this puzzling result might be that Jud et al. assessed fewer children and used instruments that were more detailed for different dimensions of HrQoL. A further possible explanation is the generally prolonged duration of time between the maltreatment incident and the assessment in the present study. However, no significant association between the time since the incident and HrQoL was detected (see Table 6). Additionally, Jud et al, as well as Greger et al., investigated a high-risk group of maltreated children and might have had more severe cases of child maltreatment in their study samples than in the present study. The present study included a broader sample of maltreated children, and therefore more resilient victims. The finding of the present study that proxy-rated HrQoL was decreased, but not self-reported HrQoL, might also be explained by different selection biases. Jud et al. investigated their children and caregivers at the same place where the children were reported to the child protection group. Their finding might therefore reflect the intention of the caregivers to report that their child was doing well. Conversely, in the present sample, the caregivers might have been more inclined to report that their child still had problems. It remains unclear whether any of these explanations are sufficient to account for the discrepancies between our results and those reported by others. Further studies are clearly warranted to clarify this issue. Additionally, discordance in HrQoL ratings between child and parent or caregiver reports have been noted repeatedly (Upton, Lawford & Eiser, 2008). In the present study, the correlation between self- and proxy ratings was similarly weak ($r=.40$, $p< .001$). This is a common problem in the field, which we attempted to address in this study by providing both self and proxy questionnaires whenever possible.

The second aim of the present study was to identify possible predictors of HrQoL in maltreated children. We found that self-reported HrQoL, as well as proxy-rated HrQoL, were predicted by the child's self-reported PTSS of the children. This result consistent with previous results (Clark & Kirisci, 1996; Warshaw, Fierman, Pratt, Hunt, Yonkers, Massion & Keller, 1993; Zatzick, Marmar, Weiss, Browner, Metzler, Golding et al., 1997). One possible explanation for

this association is that PTSS and decreased HrQoL are both potential sequelae of child maltreatment. There also might be some degree of overlap between the items used to identify PTSS and the items used to rate HrQoL. For example, items addressing fear in the UCLA PTSD RI might overlap with items addressing feelings such as sadness or loneliness in the Kidscreen-10. Additionally, the severity of the PTSS might interact with social activity of the child, addressed with the Kidscreen-10: Children with severe the PTSS may distance themselves from social activities and family and peer relationships (Olatunji, Cisler & Tolin, 2007). However, PTSS and HrQoL only showed weak correlations in the present sample (self reports r = -0.39; proxy reports r = -0.35).

Another variable we found to be associated with self- and proxy-rated HrQoL was the child's age, with younger children having higher HrQoL ratings. This result also agrees with previous findings in the general population, in which decreased life satisfaction has been documented during adolescence (Goldbeck et al., 2007). Being a stage of life that is associated with both somatic and psychosocial changes, that adolescence is linked to decreased life satisfaction could be interpreted as a developmental phenomenon (Goldbeck et al., 2007).

Emotional and behavioral symptoms reported by the children also were statistically associated with self-rated HrQoL, and the same statistical association was apparent between proxy ratings for HrQoL and proxy-rated emotional and behavioral symptoms. Both of these results agree with those of prior research, wherein an inverse relationship has been identified between HrQoL and emotional and behavioral symptoms (Rajmil et al., 2009). Here again, there may be an overlap in the constructs of emotional and behavioral symptoms and HrQoL, both of them likely impacted by past maltreatment.

Finally, as we initially hypothesized, socioeconomic status was predictive in our model for proxy-rated HrQoL: maltreated children who lived in a higher SES environment were presumed by their caregivers to have a better HrQoL. This result agrees with previous reports (Jud et al., 2013; Mielck et al., 2014) and suggests that maltreated children in families with fewer financial resources generally suffer more than children in more affluent families.

Overall, PTSS and emotional and behavioral symptoms were strong predictors of HrQoL in our models. Such symptoms, and especially those of PTSS can be influenced by interventions like trauma-focused cognitive behavioral therapy. A meta-analysis found that trauma-focused cognitive behavioral therapy was the most researched form of intervention in traumatized children (such as sexually abused children) and resulted in medium to large effect sizes (Morina, Koerssen & Pollet, 2016). Surprisingly, with the exception of socioeconomic status, no other characteristics

of parents or caregivers contributed to the model. It would be reasonable to assume that especially-strong emotional reactions or psychopathological symptoms among caregivers, parental or otherwise, could adversely affect their child's HrQoL. The results of previously-published research — which indicated that parental/caregiver-related factors like caregiver distress affects a child's HrQoL (Wilkins, O'Callaghan, Najman, Bor, Williams & Shuttlewood, 2004) — was not replicated in the present study. Though this finding might be considered somewhat puzzling, if true it also could be considered encouraging in that, if parental characteristics do not limit the well-being of children, perhaps treatment approaches that focus exclusively on the child can be effective even when the parent/caregiver is either unwilling or unable to participate. However, caregivers should be involved whenever possible, as caregiver involvement has been associated with greater overall child functioning after the termination of the intervention (e.g. Richards, Bowers, Lazicki, Krall & Jacobs, 2007).

Characteristics related to the actual maltreatment event also failed to predict HrQoL in our sample. This finding contradicts those previously reported for adult survivors, in whom factors like the form of maltreatment (physical vs. emotional vs. sexual maltreatment) and the number of different forms of maltreatment were found to impact HrQoL among survivors of childhood maltreatment. In particular, past exposure to multiple different forms of maltreatment has been documented to be negatively associated with HrQoL (Afifi et al., 2007), but not among the child victims in the present study. In our sample, there was no shortage of children who had suffered multiple different forms of maltreatment (roughly 70% of the children), so we cannot explain this discrepancy away by arguing that our sample had inadequate numbers of such cases. Rather, it is possible that, among the previously-studied adult survivors of childhood maltreatment, either recall bias or adjustment bias, or both, might have occurred.

Despite the statistical significance of our findings, multivariate analysis explained only 20% of the variability in self-reported HrQoL, and 38% of the variability in proxy-rated HrQoL. Clearly, other factors not included in our analysis played some role.

Certain limitations of this study must be mentioned. First, potential selection bias due to the convenience sample of voluntary participants may have distorted the results. Families who suffer most from child maltreatment might not participate in such a study. The results of this study might have been altered if we had included more severely affected families. This limitation also relates to the extent to which the findings can be generalized more broadly to children who have been maltreated. Second, the cross-sectional design of this study limits our ability to draw conclusions

on causality. Thus, when we speak of predictors throughout this manuscript, we must concede that we are only speaking of variables as predictive within the context of the regression model, and not necessarily predictive clinically or temporally.

Conclusions

Based on our findings, several suggestions for clinical practice and future directions for research can be made. First, we believe that it is important to treat PTSS and emotional and behavioral symptoms in maltreated children since, whether or not these actually cause lower HrQoL, they are clearly associated. Trauma-focused cognitive behavioral therapies have the capacity to address the needs of such children. Future research should scrutinize parental factors in attempts to explain the results of this study that were discordant with those published by others. We also suggest that further research should focus on factors that we did not assess, like child-parent relationships and parenting styles, to create a more complete picture of HrQoL and the factors that might influence it among maltreated children.

2.6 Acknowledgments

All data used for this publication were assessed within the CANMANAGE project that was funded by the German Federal Ministry of Education and Research (grant number 01KR1202A). The authors would like to especially thank the CANMANAGE Study Team for data collection.

3 Psychotherapeutic care for sexually-victimized children – Do service providers meet the need? Multilevel analysis.

Reference: Weber, S., Landolt, M. A., Maier, T., Mohler-Kuo, M., Schnyder, U. & Jud, A. (2017). Psychotherapeutic care for sexually-victimized children – Do service providers meet the need? Multilevel analysis. *Children and Youth Services Review, 73,* 165–172. DOI: 10.1016/j.childyouth.2016.12.015

3.1 Abstract

Objectives: Surprisingly little is known on the decision to refer sexually-victimized children to psychotherapy. Previous research on service provisions for victims of child maltreatment has analyzed the impact of case characteristics, like child or caregiver functional levels, lack of social support, and socioeconomic status. Findings, however, show that the decision to provide services is not only needs-driven, but also affected by external factors like provincial legislation, institutional policies, and the availability and accessibility of services. By analyzing characteristics behind the decision to refer sexually-victimized children to psychotherapy at the case and institutional level, we aimed to disentangle the complex interplay of factors driving this decision.

Methods: The data for this analysis were drawn from the first nationally-representative agency survey on reported child sexual victimization (CSV) in Switzerland. Over a 6-month data-collection period, 165 child protective services, 87 penal authorities and 98 agencies in the health and social sector documented a total of 911 incidents of CSV. Multilevel logistic regression was applied to analyze factors at both the case and contextual level.

Results: The main finding was that the severity of consequences was strongly associated with the likelihood of psychotherapeutic service referrals (OR = 10.4; $p < 0.001$). However, one bias was identified at the individual level: sexually-victimized children born in Switzerland were more likely to be referred to psychotherapy than immigrant children. Institutional disparities in the decision to refer a sexually-victimized child to psychotherapy were large (median OR = 3.83), with penal authorities referring significantly fewer cases to psychotherapy than specialized agencies in the health and social sector. What exactly was driving the difference between psychotherapy referral in different types of agency remains largely unexplained.

Conclusions: Future research should invest in scrutinizing contextual factors of child protective service decisions. As we operationalize the need for psychotherapy as proxy-rated consequences of victimization, routine screening for mental health needs using standardized measures

for children in contact with child protection agencies should be implemented, to help frontline workers to identify the psychotherapeutic needs of victimized children.

3.2 Introduction

Sexual violence against children and adolescents (child sexual victimization CSV; Averdijk, Mueller-Johnson, & Eisner, 2011; Barter, McCarry, Berridge, & Evans, 2009) is a global problem that affects millions of children and adolescents worldwide (Barth, Bermetz, Heim, Trelle, & Tonia, 2013; Stoltenborgh, Bakermans-Kranenburg, Alink, & van IJzendoorn, 2015). The reported prevalence of CSV in Europe is 9.6%: 13.4% in girls and 5.7% in boys (Sethi & World Health Organization, 2013). A nationally-representative study in Switzerland identified at least one type of child sexual abuse event in 40.2% of girls and 17.2% of boys (Mohler-Kuo et al., 2014). Roughly 2.68 cases of CSV per 1,000 children and adolescents are disclosed annually to agencies in Switzerland (Maier, Mohler-Kuo, Landolt, Schnyder, & Jud, 2013). Child sexual victimization is strongly associated with multiple forms of other negative childhood experiences (Maniglio, 2009, 2013). Posttraumatic stress disorder (PTSD), depression and other psychiatric problems are among the major consequences of CSV (e.g., Irish, Kobayashi, & Delahanty, 2009).

Who needs psychotherapy after CSV?

Not all children and adolescents who have been sexually victimized go on to develop significant psychiatric symptoms and/or problem behaviors. Therefore, the challenge is to determine which children are in need of further specialized services like psychotherapy after CSV. There is growing evidence that older sexually-victimized children and adolescents are more symptomatic at assessment than younger victims (e.g., Briere & Elliott, 2003; Feiring, Taska, & Chen, 2002; Feiring, Taska, & Lewis, 1999), whereas the conventionalization of PTSD in young children is not yet well established. Consistent with this finding is some evidence supporting the delayed onset of depressive symptoms or PTSD (e.g. Samson & Andersen, 2009; Smid, Mooren, van der Mast, Gersons, & Kleber, 2009). Additionally, as the literature indicates, a higher frequency of victimization and the lack of social support are linked to increased psychiatric symptoms (e.g., Briere & Elliott, 2003; Kendall-Tackett, Williams, & Finkelhor, 1993; Ullman, Peter-Hagene, & Relyea, 2014).

There is a considerable body of literature indicating that psychotherapy addresses the mental health problems of sexually-victimized children (e.g., Cohen, Mannarino, Murray, & Igelman, 2006; Gillies, Taylor, Gray, O'Brien, & D'Abrew, 2012; Meca, Alcázar, & Soler, 2011). One

published meta-analysis tested the effectiveness of psychological interventions for child maltreatment and detected that, on average, psychologically-treated participants appeared to be functioning better than 71% of their non-treated counterparts in areas like cognitive functioning and child behavior (Skowron & Reinemann, 2005). In particular, cognitive-behavioral approaches (CBT) help to reduce the negative consequences of sexual victimization among children and adolescents (Benuto & O'Donohue, 2015). Previous research suggests that this approach is successful for preschool children (Scheeringa, Weems, Cohen, Amaya-Jackson, & Guthrie, 2011), as well as school-aged children (e.g., De Arellano et al., 2014; Goldbeck, Muche, Sachser, Tutus, & Rosner, 2016).

Factors influencing frontline worker decisions to provide services

While there is a lack of research on factors driving the decision to refer victims of CSV to psychotherapeutic care, there is broad evidence that several case characteristics influence the decisions of child protection agencies regarding service referrals, as in decisions to place children in out-of-home care. Case characteristics associated with increased referrals to services are household moves (e.g., Fluke, Chabot, Fallon, MacLaurin, & Blackstock, 2010), poverty (e.g., Coulton, Korbin, Su, & Chow, 1995; Lery, 2009), single parenting (e.g., Ben-Arieh, 2010; Zuravin & DePanfilis, 1997), child behavior or mental health issues (e.g., Burns et al., 2004; Jud, Fallon, & Trocmé, 2012), impaired caregiver function (e.g., Fluke et al., 2010) and prior reports to child protection services (e.g. Leslie, Hurlburt, Landsverk, Barth, & Slymen, 2004). Concerning the age of the child, the literature is contradictory, with both younger age and adolescence associated with an increased number of referrals to services (e.g., Horwitz, Hurlburt, Cohen, Zhang, & Landsverk, 2011; Rivaux et al., 2008). Additionally, there is some evidence that the association between race or ethnicity and mental health service use may point to potentially-biased decision-making: immigrants appear to be less likely to both seek and receive services (e.g., Abe-Kim et al., 2007; Huang, Yu, & Ledsky, 2006; Straiton, Reneflot, & Diaz, 2014). Furthermore, male gender is associated with the increased use of mental health services (e.g., Leslie et al., 2000). However, girls seem more likely to be referred to mental health services if they have been sexually victimized (e.g., Maschi, Perez, & Gibson, 2010).

The decision to refer a sexually-victimized child to psychotherapy is not only driven by case characteristics, but also by contextual factors like the nature of the organization, cantonal (provincial) legislation, institutional policies, and the availability and accessibility of services (Baumann, Dalgleish, Fluke, & Kern, 2011; Belanger & Stone, 2008; Gambrill, 2008; Jud et al., 2012; Rivaux et al., 2008; Runyan, Gould, Trost, & Loda, 1981). Previous research on service provision suggests

that rural location is associated with the limited availability and accessibility of services (e.g., Belanger & Stone, 2008). On the other hand, findings on urban/rural differences in service referrals are mixed (e.g., Jud et al., 2012).

Aims of the current study

Although referrals to psychotherapeutic services are assumed to be based on the assessment of needs and problems, there is a remarkable lack of information about the process used to match services with the needs of children, adolescents and caregivers (Barth et al., 2005; DePanfilis & Zuravin, 2001; Gilbert et al., 2009; Jud et al., 2012). This study therefore aims to identify factors associated with referral to psychotherapy after CSV, and to account for the relative effects of case-level and agency-level factors, by analyzing data from a nationally-representative agency survey on reported CSV in Switzerland. Potential predictors of psychotherapy referral were extracted from previous research on service referrals.

The Swiss child protection system

The complex Swiss child protection system needs to be considered when analyzing and interpreting the present data. In Switzerland, the provision of child protective services is organized according to the political principles of federalism and subsidiarity (Häfeli & Voll, 2008; Häfeli, 2014). Additionally, private and semi-private agencies both play a role in the supply of child protection services. Thus, services are divided between municipalities, states and the Swiss Confederation, with a distinctive variety of agencies and organizations enhanced by cultural and linguistic disparities in different parts of the country. Service providers can be broadly categorized into three types: public child protective services, penal authorities, and specialized agencies within the social and health sector (Maier et al., 2013).

Public child protection

The Swiss Civil Code (SCC) rules call for action in situations wherein parents are “unwilling or unable to remedy the situation” if “the child’s well-being is threatened” (art. 307 al. 1 SCC). So-called ‘tutelary authorities’ are entitled to establish legal orders to protect the endangered child. Their main instruments of intervention range from admonitions up to the withdrawal of parental responsibility (Hegnauer, 1999). Once a child protection order is installed, frontline workers in specialized child protective services or general social services are mandated to execute the order

by assisting the child and his/her family. Some of the child protection authorities are constituted as courts, while others take the form of administrative authorities (Wider, 2013).

Penal authorities

Penal authorities handling cases of severe child maltreatment include the police force, the criminal courts and prosecution agencies, with specialized juvenile courts and juvenile prosecution organizations to enforce juvenile criminal law. Several of the federally-organized police corps have specialized child protection units. To hold perpetrators criminally liable, these institutions are mandated to investigate reported incidents and substantiate each allegation. In accordance with Article 305 of the Swiss Federal Law on the Organization of Federal Penal Authorities, the penal authorities only forward the victim's personal data to victim aid agencies if the victim agrees. These agencies then have the obligation to contact the victim and offer help and counseling free of charge.

Specialized agencies in the social and health sector

Public and private bodies have established specialized agencies supporting children affected by sexual abuse, maltreatment or neglect, including interdisciplinary child protection teams. Since the first child protection team was established at University Children's Hospital, Zurich in 1969, child protection teams have been established in 20 out of 36 Swiss children's hospitals or departments (Jud, Lips, & Landolt, 2010), and numerous cantons (provinces) have established cantonal or regional child protection teams (Krüger & Niehaus, 2010). These teams bring together professionals with different backgrounds (e.g., psychiatrists, psychologists, social workers, pediatricians and law professionals) to evaluate each case. Besides these public or semi-public agencies, there are different private agencies specialized in supporting victims of child maltreatment or, even more specifically, sexual victimization. These specialized private agencies are primarily located in urban centers. In addition to agencies specialized in dealing with alleged child maltreatment, there is a great variety of other agencies in different sectors that deal with the mental health problems of children and adolescents.

3.3 Methods

Sampling

All data for this analysis were extracted from the first nationally-representative agency survey on reported CSV in Switzerland (Maier et al., 2013). Swiss institutions, organizations and

agencies that handle cases of CSV were categorized into the three types previously mentioned in 1.4.: public child protective services, penal authorities, and agencies in the social and health sector. The sampling design entailed stratified two-stage sampling with agencies in the child protection system as the primary sampling units. The secondary sampling units were the CSV cases at each agency. Figure 6 displays the 2,354 agencies that were identified and a representative sample of 1,267 agencies that were selected and invited to participate. All penal authorities and specialized agencies in the social and health sector were included. The total number of 1,650 public child protection authorities[1] and mandated services in Switzerland was reduced though a stratified sampling method to 631; thereby reducing the total sample to 1335 agencies. Sixty-eight of the selected agencies had already ceased to exist when contacted. The selected agencies remaining were invited to participate by completing online forms for each newly-reported case of CSV to their agency between March 1, 2010 and August 31, 2010. An incentive of 50 Swiss Francs was offered for every reported case.

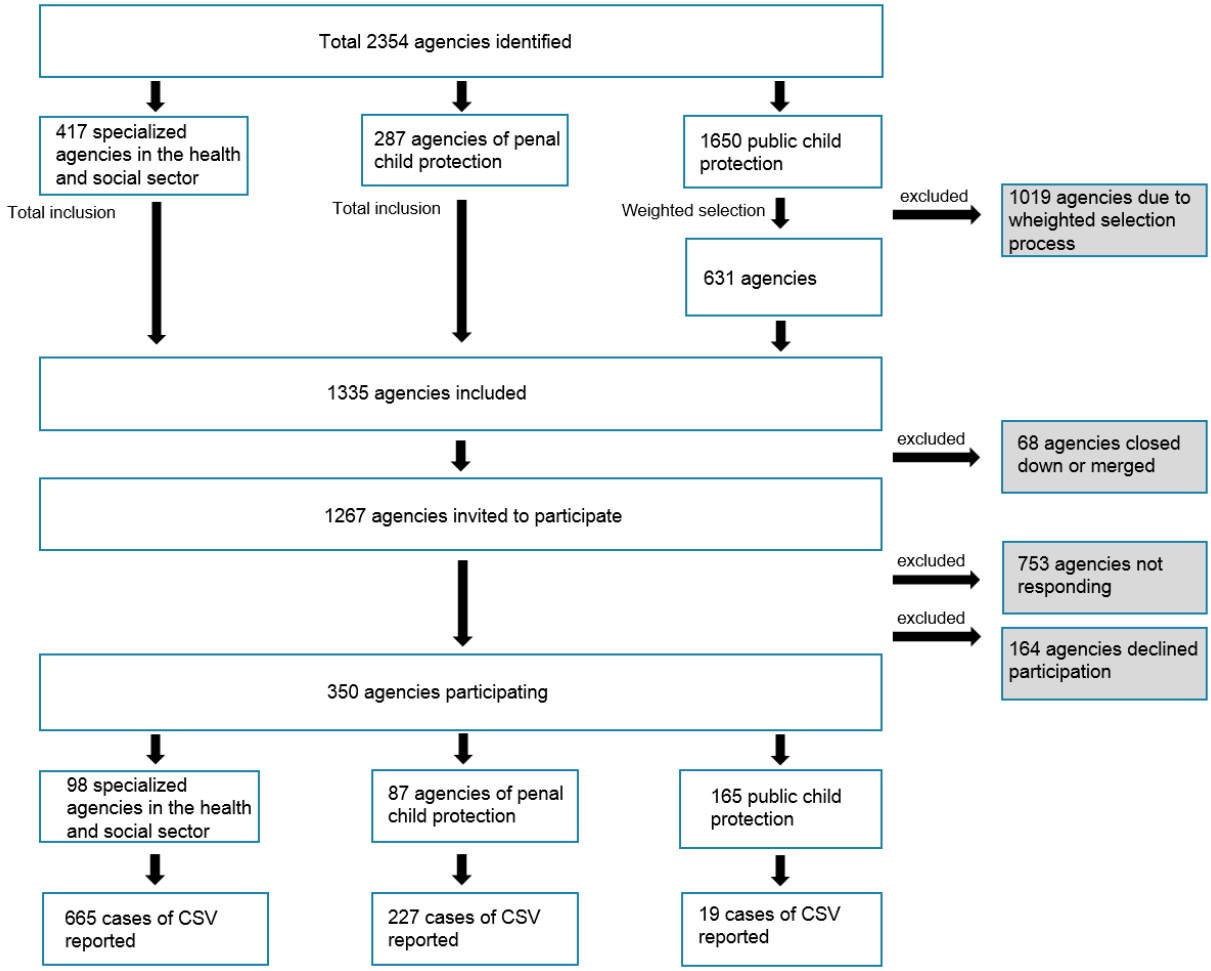

Figure 6. Sampling and participation flowchart

[1] The number of public child protection authorities has since been dramatically reduced through a change in national legislation in 2013 (Häfeli, 2014).

One hundred sixty-four agencies (13%) declined to participate and 753 (59.4%) failed to respond. Most of the non-responding agencies were child welfare agencies in municipalities with less than 1,000 inhabitants. Overall, 165 agencies in the public child protection sector (47%), 87 agencies in the penal sector (25%) and 98 specialized agencies in the health and social sector (28%), participated in the study. Over the 6-month data-collection period, a total of 911 incidents of CSV were documented by 109 different agencies. As shown in Table 7, 733 girls and 178 boys between 0 and 18 years old were reported on. Further details on the sampling procedure are presented elsewhere (Maier et al., 2013).

Table 7. Descriptive characteristics for independent variables (n=911)

Level 1 (case) characteristics	n or *M*	Percent or *SD*
Child age (at the time when reported to the agency)	11.5	4.5
Child gender (female)	733	80.5
At least one child function issue	145	15.9
Developmental disorder	84	9.2
Attention deficit hyperactivity disorder (ADHD)	12	1.3
Emotional disorder	82	9.0
Intellectual/learning disability	22	2.5
Autism	2	0.2
Craniocerebral injury	0	0.0
Other mental disabilities	70	7.7
Physical disabilities	8	0.8
Severe chronic condition	22	2.4
Child born in Switzerland	626	68.7
At least one household move noted	66	7.2
Single caregiver only	176	19.3
At least one caregiver function issue	97	10.6
Household regularly runs out of money for basic necessities	732	80.4
Non-professional source of referral	481	52.8
Substantiated or suspected sexual abuse	732	80.4
Repeated abuse	362	39.7
Previous referrals	90	9.9
Possible or moderate/severe aftermath		
Possible	297	32.6
Moderate/severe	469	51.5
Level 2 (agency) variables		
Sector		
Specialized agencies in the health and social sector	665	73.0
Public child protection agencies	19	2.1
Penal authorities	227	24.9

Location		
German part of Switzerland	857	94.1
Latin (French or Italian) part of Switzerland	54	5.9

Measures

As mentioned previously, as indicators of factors associated with psychotherapy referrals, case characteristics associated with service referrals in general were included in this analysis. Data were collected with an online questionnaire which was an adapted version of the tool used in the U.S. National Incidence Study of Child Abuse and Neglect (NIS-4, Sedlak & Webb, 2008). This questionnaire contained 27 questions for each case of CSV. Of these, 13 questions assessed personal characteristics of the victim, including gender, age, type and severity of CSV, level of substantiation, and the frequency and consequences of CSV. Family and social background were assessed with eight further questions, including items on the primary caregiver and household composition. Four items asked about the perpetrator and the act of child victimization. The last two questions asked about services provided by the agency and referrals to other agencies (Maier et al., 2013). The frontline worker could indicate whether the child was referred to psychotherapy or any other service, and if the service was provided by the agency itself or another institution. The consequences of CSV were rated by the frontline worker from ‘no harm’ to ‘possible harm’ to ‘moderate or severe harm’. Moderate consequences were operationalized as behavioral problems, as well as physical or psychological impairment that is observable and lasts for at least 48 hours. Severe consequences were defined as consequences of maltreatment which rendered professional medical or psychotherapeutically interventions necessary.

Child behavior and mental health issues were operationalized as at least one of the following child function issues present: developmental disorder, ADHD, emotional disorder, intellectual/learning disability, autism, traumatic brain injury, physical disabilities, and severe chronic illness. The reliability of information on the incident of CSV has been operationalized in three categories: Information on the victimization provided by third parties (suspicion), information provided by directly involved persons (possible) and corresponding information from different sources (substantiated). For this analysis, cases labelled possible and substantiated have been merged into one category. Further information on the operationalization of the independent variables is presented in Table 8.

The dependent variable (being referred to psychotherapy after CSV) was dichotomized into cases in which the child/adolescent was referred to psychotherapy and cases in which there was no referral to psychotherapy. Types of psychotherapies are not differed as Switzerland’s landscape

of psychotherapies-in-use is diverse and not transparent (Schuler, Tuch, Buscher, & Camenzind, 2016).

Table 8. Operationalization of the independent variables

Variable	Definition	Values
Level 1 (case) characteristics		
Child age	Age of child, up to 18 years	
Child gender	Child gender	0 male, 1 female
Child's functional status	At least one of the following child function issues was confirmed or suspected: developmental disorder, ADHD, emotional disorder, intellectual/learning disability, autism, craniocerebral injury, physical disabilities, severe chronic illness	0 no child functioning issues 1 at least one child functioning issues
Origin of the child	Child born in Switzerland	0 unknown/not born in Switzerland 1 born in Switzerland
Household moves	The household was moved at least once within the past year	0 not noted 1 noted
Single caregiver	Other adult living in the same household	0 not noted 1 noted
Financial issues	Household regularly runs out of money for basic necessities	0 not noted 1 noted
Non-professional source of referral	Who reported the case to the agency	0 professional/unknown, 1 non-professional
Reliability of information on CSV	Substantiated or suspected form of CSV	0 suspicion 1 possible/ substantiated
Chronicity	How often was the child abused: singular or repeated	0 singular, 1 repeated
Previous reports	Previous notifications about possible abuse of this child	0 no previous notifications 1 previous notifications
Consequences of CSA	What are the consequences of the CSA (health and mental health)	0 no harm, 1 possible 2 moderate or severe
Level 2 (agency) variables		
Location of the agency	The agency is located in the German part or in the Latin (Italian or French) part of Switzerland	0 German part 1 Latin part
Type of agency	Agencies in the social and health sector versus public child protective services versus penal authorities	0 social and health 1 public 2 penal

Data analysis

To take into account the hierarchical structure of the data, multilevel analyses were used to identify any associations between different potential predictors and referral to psychotherapy after CSV (Diez-Roux, 2000). The data had a two-level structure – Level 1 was the individual case level, including case-related variables, while level 2 was the agency level, including agency-related variables. Some of the assumptions of "traditional" regression modeling are not valid for nested data (e.g., the assumption of independent predictors for referrals to psychotherapy within the same agencies; Kline, 2005). If we failed to account for the existing hierarchical structure in data, the estimates of the observed covariates would have likely been biased (e.g., Stephenson, Baschieri, Clements, Hennink, & Madise, 2006). Due to internal policies and regulations, cases of CSV handled within the same agency are more likely to receive similar treatments/therapies than those from different agencies. The multilevel model adjusts for this correlation across units of observation.

For the multilevel analyses, an unconditional multilevel model (null model) was used to examine the degree to which the agencies contributed to the total variance observed in the dependent variable. A second (level 1) model, with characteristics of the child/adolescent and caregiver as covariates, was evaluated. Finally, a third model (full model) including characteristics of the child/adolescent, caregiver, and agencies was tested. As an indicator of the extent to which an individual's probability of receiving psychotherapy is determined by inter-agency variability, the median odds ratio (MOR) was calculated, which translates agency-level variance into the widely-used odds ratio scale (Merlo et al., 2006). To assess the dependent variable "being referred to psychotherapy after CSV", the glmer command in the lme4 package in R was used for all model estimates (Bates, Mächler, Bolker, & Walker, 2015). On multilevel analyses, the magnitudes of relationships between the dependent variable (random effect) and each of the independent variables (fixed effects) were assessed using odds ratios and their confidence intervals. The variable "caregiver function issues" yielded many missing cases (344 of 911). It was therefore excluded from further analyses. All multilevel analyses were conducted using the open source R statistical environment (R Development Core Team, 2008).

A statistical weighting procedure accounted for the varying response rates in different geographical areas and in different types of agency. The probability of participation was analyzed based on a stratified logistic model, considering contact priority, the type of institution and language area, with an adjustment for non-participating agencies (Maier et al., 2013). Details on the

weighting procedure have been presented elsewhere (Maier et al., 2013). All statistical procedures were supervised by a methodological advisor.

3.4 Results

Child and family characteristics

The results of univariate and multilevel logistic regression analyses for referral to psychotherapy are presented in Table 9. In the univariate logistic regression models, age of the child, family financial issues, having a single caregiver, the child's origin, moderate to severe consequences of the CSV, and repeated victimization were significantly associated with referral to psychotherapy. When univariate logistic regression and multilevel analyses were compared, some significance estimates changed. While the consequences of CSV, age of the child/adolescent, origin of the child/adolescent, having a single caregiver, and repeated victimization remained significantly associated with referral to psychotherapy, financial issues were no longer associated with psychotherapy referral in multilevel models. Most associations were positive in direction (i.e., direct), indicating an increased probability of referral to psychotherapy if the characteristic was present. However, repeated victimization was negatively (i.e., inversely) associated with service referral. This means that children and adolescents who were repeatedly victimized were less likely to be referred to psychotherapy than children and adolescents who had experienced just a single event of sexual victimization. The strongest relationship with referral to psychotherapy at an individual level was identified for moderate to severe consequences of victimization. The probability of being referred to psychotherapy increased tenfold for these moderate to severe consequence cases.

Agency characteristics

In the null model, an MOR of 3.83 pointed towards a significant difference in the probability of being referred to psychotherapy after CSV between agencies in the sample (Table 10). The type of agency remained significant when agencies were treated as clusters in multilevel logistic models. Penal authorities were significantly inversely associated with referral to psychotherapy, relative to specialized agencies in the health and social sector. The probability of being referred to psychotherapy decreased tenfold among penal authorities. The location of the agency within Switzerland did not account for variance in the model.

Table 9. Simple and multilevel regression models for referrals to psychotherapy

	Univariate logistic regression			Multilevel logistic regression					
				Null model		Level 1 model[1]		Full level 2 model[1]	
	Est./SE		OR	Est./SE	OR	Est./SE	OR	Est./SE	OR
Level 1 (case) characteristics									
Child age (continuous)	0.06	*	1.07			0.05 *	1.05	0.06 *	1.06
Child gender (female)	-0.19		0.83			-0.3	0.74	-0.31	0.73
Child's functional status	0.26		1.29			0.5	1.66	0.46	1.58
Child born in Switzerland	0.66	**	1.93			0.71 **	2.03	0.71 **	2.03
Household moves	0.48		1.62			0.13	1.14	0.15	1.16
Single caregiver only	0.7	**	2.01			0.59 *	1.8	0.54 *	1.71
Financial issues	-0.75	**	0.64			-0.25	0.78	-0.26	0.77
Non-professional source of referral	0.14		1.15			0.22	1.24	0.16	1.18
Substantiated/ suspected type of maltreatment	0.08		1.08			0.02	1.02	0.04	1.04
Repeated victimization	-0.6	*	0.55			-0.68 **	0.5	-0.67 **	0.51
Previous referral	0.49		1.64			0.35	1.41	0.3	1.35
Possible or moderate/severe aftermath									
Possible	0.86		2.36			0.88	2.41	0.7	2.02
Moderate/severe	1.99	***	7.34			2.67 ***	14.44	2.35 ***	10.44

Level 2 (agency) variables											
Sector[2]											
	Public child protection agencies	-0.79		0.45					-1.16		0.31
	Penal authorities	-1.3	***	0.27					-1.77	***	0.17
Location[3]											
	Latin part of Switzer-land	0.41		1.5					0.39		1.48
Constant					-1.59	***	-3.97	***	-3.25	***	

Notes: [1] 95 cases excluded listwise due to missing variables; [2] the two sectors displayed are compared to specialized agencies in the social and health sector; [3] the Latin part of Switzerland is compared to the German-speaking part; OR= odds ratio; Est. = estimates; SE = standard errors.

* $p<.05$, ** $p<.01$.

Model parameters

Parameters of the multilevel logistic regression model are presented in Table 10. The information criteria decreased for the Akaike Information Criterion (AIC) and increased for the Bayesian Information Criterion (BIC) from the level 1 model to the full level 2 model, which indicates that adding the variables to the second level improved the goodness of model fit slightly.

Table 10. Model parameters of multilevel logistic regression for referrals to psychotherapy

	Goodness of fit statistics		Median Odds Ratio
	AIC	BIC	(MOR)
Null model	922.1	931.7	3.83
Level 1 model	733.7	804.3	2.93
Full level 2 model	721.3	810.7	2.60

3.5 Discussion

This nationally-representative agency survey on child protection is the first to provide estimates of psychotherapy referrals for reported CSV in Switzerland. A first key finding of this analysis was the tenfold increase in the probability of referral to psychotherapy for sexually-victimized children with moderate to severe health and/or mental health consequences relative to children with no harm, as rated by the frontline worker. In this study, proxy-ratings of severity of consequences were used as an approximation for the need for psychotherapy. The high OR we observed is exceptional and suggests that the decision to refer a child to psychotherapy after CSV was primarily needs-driven.

A second major finding was the increased probability of referral to psychotherapy among victims of CSV born in Switzerland versus children born abroad explanation for this potentially-biased decision-making might be that these children are assume. This result is in accordance with previous research. An earlier U.S. study found that immigrant children and adolescents were less likely than their native-born counterparts to receive services (Huang et al., 2006). One possible explanation for this potentially-biased decision-making might be that these children are assumed not to speak the local language sufficiently to benefit from psychotherapy. Nevertheless, possible language barriers can be addressed by involving an interpreter. In this case, frontline workers need to be trained about the potential benefits and limitations of psychotherapy in immigrant children and immigrant families. Another, more alarming explanation is the process of "creaming", which describes the allocation of scarce resources to "more promising" cases (e.g., Jud, Perrig-Chiello,

& Voll, 2011). Furthermore, sexually-victimized immigrant children could be in particular need of psychotherapy, due to adaption problems or social and financial hardships (e.g., Cobb-Clark & Hildebrand, 2006; Paulson & Osili, 2007). In this light, the results presented here are even more alarming.

Rather surprising was a third main finding: that children who were repeatedly victimized were significantly less likely to be referred to psychotherapy. This was unexpected, since older children are more at risk of having been repeatedly victimized (biserial correlation $r_b = 0.16$, $p < 0.001$) and increased age was positively associated with the increased probability of being referred to psychotherapy. As we controlled for age and severity of consequences in the analyses, these two variables might have captured the shared variance between them and repeated victimization. A further possible interpretation might be that repeatedly-victimized children are already receiving psychotherapy or other forms of psychosocial treatment. Additionally, most forms of psychotherapy, including cognitive-behavioral therapy, are verbal therapies whereby the ability to speak is essential. Infants and young children lack this ability. However, this is no reason to avoid referring such children to psychotherapy, as non-verbal treatments like play therapy (Bratton, Ray, Rhine, & Jones, 2005; Drožđek & Bolwerk, 2010) address this problem. This being said, there might be a scarcity of specialists qualified to offer such therapy.

Furthermore, earlier research suggests that there might be an age difference in children's adaption to CSV (Briere & Elliott, 2003; Feiring, Taska, & Lewis, 1999; Feiring et al., 2002). Adolescents report higher levels of depressive symptoms and lower levels of self-esteem than younger children at the time of assessment (Feiring et al., 1999). The expression of symptoms might also vary over the course of development (e.g., Feiring et al., 1999). Therefore, children should be examined repeatedly after CSV, especially as there is some evidence supporting the delayed onset of depressive symptoms or PTSD (Smid et al., 2009; Teicher et al., 2009).

Previous reports of CSV were not associated with the increased probability of psychotherapy referral. Additional analysis revealed a direct association between previous reports of CSV and repeated victimization, indicating that repeatedly-victimized children were more often reported to agencies than children with only one event of CSV. However, only 10% of this study population had a prior history of involvement with the child protection system and, as stated earlier, those children might already have been receiving psychotherapeutic care.

Being a child with a single parent or single caregiver was directly associated with the increased probability of psychotherapy referrals. This finding corresponds with previous research on service referrals (e.g., Ben-Arieh, 2010; Zuravin & DePanfilis, 1997). It also especially makes

sense if (a) single parents report higher levels of perceived chronic stress; and (b) single parents also perceive having less social support and social involvement, as well as less frequent contact with friends and family than non-single parents (Cairney, Boyle, Offord, & Racine, 2003).

Previous research indicates that case characteristics — like female gender, child function issues, multiple household moves, financial problems, previous reports of CSV, reliability of the report and professional source of referral — are associated with increased service utilization (Burns et al., 2004; Coulton et al., 1995; Fluke et al., 2010; Jud et al., 2012; Lery, 2009; Leslie et al., 2000; Maschi et al., 2010; Zuravin & DePanfilis, 1997). However, these characteristics were not associated with either the increased or decreased probability of referral to psychotherapy in the present study. Some of this discrepancy versus previous evidence might be associated with different national contexts. The Swiss health care system, for example, is hardly comparable to the health care system in the U.S. Swiss residents have mandatory health insurance that covers medical (and psychiatric) treatments, while poor families in the U.S. are often not covered by health insurance (Smith & Medalia, 2015). Children with functional issues (like a developmental disorder, ADHD, emotional disorder, intellectual/learning disability, autism, craniocerebral injury, physical disabilities and severe chronic illness) were not more likely to be reported to psychotherapy after CSV than children with no functional issues or adjustment problems in the present study. However, these children might already be receiving specific therapy due to their condition or problems. In assessing the role of gender, the reliability of the report as well as household moves and the variable "non-professional source of referral", were included as possible confounders. However, this was not confirmed in the present study.

At an agency level, a fourth key finding was the decreased probability of referral to psychotherapy among penal authorities relative to specialized agencies in the social and health sector. The barriers blocking referral of a child to psychotherapy might be smaller for a specialized agency in the health and social sector than for penal authorities because the agencies' mandates are different (e.g., Trocme, Akesson, & Jud, 2015). The primary purpose of penal authorities is to investigate and substantiate allegations. However, as mentioned previously, the penal authorities forward the victim's personal data to victim aid agencies, if the victim consents. In contrast, the overriding aim of a specialized agency in the health and social sector is to help and support the child or adolescent and its family in their specific situation. Overall, the organizational context had a remarkable impact on referrals of sexually-victimized children and adolescents to psychotherapy. However, what exactly was driving the difference between agencies largely remains unexplained. The introduction of agency characteristics associated with referral to psychotherapy

decisions in the model did not improve the model fit in any remarkable way. Although significant differences between agencies were detected, it is not possible to clarify whether these could be attributed to differences in policies, or to differences in the demographic characteristics of the population served or availability of services. The location of the agency within Switzerland also failed to explain any additional variance.

A major strength of this first national study on service provision in Switzerland was that we included different major types of agency and service provider at the national level in Switzerland. However, certain limitations of the study merit note. First, only 23% of the addressed agencies responded and delivered data for this study; as such, response bias might have occurred. For a detailed discussion of non-response, see Maier et al. (2013). Second, the service referrals assessed in this study were provided during the investigation, and no long-term follow-up assessments were conducted. As such, the accessibility and actual utilization of psychotherapeutic services were not tracked. Third, the factors analyzed in this study were largely driven by research on child protective service provision and out-of-home placement (e.g., Hurlburt et al., 2004; Jud et al., 2012; Rivaux et al., 2008; Runyan et al., 1981). Nonetheless, variables associated with the decision to refer a sexually-victimized child to psychotherapy might differ from these factors. Fourth, if several children from the same family were analyzed, individual-level results might be skewed, especially if a number of large families were included. Furthermore, because it is probable that the same frontline worker made the same decision for siblings and individual tendencies to either refer or not refer, two additional levels could be added to the model in future studies: the family level and frontline worker level. Finally, all information about the family, child, consequences of the victimization, and the provision of psychotherapy were based on assessments performed by the frontline worker and were not externally verified. This being said, the accuracy of information was not part of the targeted research question. Moreover, the study sought to analyze the impact of case and contextual characteristics on frontline workers' decision to refer sexually-victimized children to psychotherapy – a decision that is based upon the information available to the decision-maker.

Conclusions

In our survey, the decision to refer a victim of CSV to psychotherapy was primarily driven by the severity of CSV-related consequences, with a marked disparity between the different types of agency involved in child protection. A bias was identified at the individual level: survivors of CSV born in Switzerland were more likely to be referred to psychotherapy than their immigrant

counterparts. Even if there is a growing interest in analyzing child welfare service provision, studies remain limited and therefore needed. Future research should target scrutinizing contextual factors of child protective services decisions. Why immigrant children were less likely referred to psychotherapy is a question that should be examined in future research. In the current study, the need for psychotherapy was operationalized as proxy-rated consequences of the victimization. One clinical implication of our results is that routine screening for mental health needs using standardized measures for children in contact with child protection agencies would help frontline workers, who are usually not trained psychotherapists, to identify the psychotherapeutic needs of children (Burns et al., 2004).

3.6 Acknowledgments

We wish to thank the agencies that participated in this study; as well as Ursula Meidert, who helped with data collection; and Rita Achermann from the division of Psychological Methods, Evaluation, and Statistics, University of Zurich for statistical advice. The data presented in this paper were assessed in the context of the Optimus Study. The Optimus Study was initiated and funded by the UBS Optimus Foundation (http://www.optimusstudy.org).

C: GENERAL DISCUSSION

4 Summary of findings

The overall objective of this thesis was to gain a deeper insight into the relationship between child maltreatment and the children's HrQoL. Additionally, service provision after child sexual victimization was addressed by analysing psychotherapy referrals of sexually victimized children. First, a systematic literature review laid the foundation of this research by highlighting the need for more research in the field of HrQoL in maltreated children (Weber et al., 2015). The second study presented the results of an analysis of predictors of HrQoL in maltreated children in a German sample (Weber et al., submitted). Finally, the third study (Weber et al., 2017) examined psychotherapy referrals after CSV in Switzerland by examining case characteristics and context characteristics. The results of these three publications are summarized in Table 11.

Table 11. Overview of main results of the three publications

Title	**Quality of life in maltreated children and adult survivors of child maltreatment: a systematic review**
Main Results	• Nineteen articles met all inclusion criteria • Significant negative associations between child maltreatment and self- and proxy-rated HrQoL • Effect sizes range from small to large • Number of types of maltreatment and HrQoL negatively related
Title	**Quality of life in maltreated children and adolescents – An analysis of predictors**
Main Results	• Predictors of decreased self-reported HrQoL: older age, self-reported posttraumatic stress symptoms (PTSS), self-reported emotional and behavioural symptoms • Predictors for decreased proxy-reported HrQoL: older age, self-reported PTSS, emotional and behavioural symptoms of the child/adolescent as reported by the caregiver and low socioeconomic status • Multivariate analyses explained 20% of the variability in self-reported HrQoL and 39% in proxy-rated HrQoL
Title	**Psychological care for sexually victimized children – does it meet the need? Multilevel analysis**
Main Results	• Severity of consequences strongly associated with likelihood of psychotherapeutic service referrals • Sexually victimized children born in Switzerland more likely to be referred to psychotherapy than immigrant children • Institutional disparities in the decision to refer a sexually victimized child to psychotherapy large (penal authorities refer significantly fewer cases than specialized agencies in the health and social sector)

This general discussion chapter begins with a summary of the results (Section C1), followed by general reflections on the findings and the specific value of this thesis (Section C2). Limitations

are discussed in a third part (Section C3) followed by implications for future research, for clinicians, and for policies (Section C4). Finally, the section is completed by a general conclusion (Section C5).

5 General reflection

At the beginning of this dissertation project, the systematic literature review served to gain a more comprehensive overview of the field of child maltreatment and HrQoL research. Although studies were sparse, especially studies which addressed children after maltreatment and not only adult survivors, decreased HrQoL has been found in both adults and children. The second paper (CANMANAGE study) compared HrQoL in maltreated children with non-maltreated peers and identified potential predictors of HrQoL in maltreated children. Both projects (review and CANMANAGE study) used HrQoL as an outcome variable in child maltreatment and found decreased values.

It may be questioned whether maltreated children receive the psychological attention they need. We therefore addressed the psychological service provision in sexually victimized children in a third project (OPTIMUS study). There, we found that not all children in need are referred to psychotherapy. We found that immigrant children are significantly less often referred than native victims (Weber et al., 2017). Figure 7 provides an overview of these three papers and places them in the context of the present thesis.

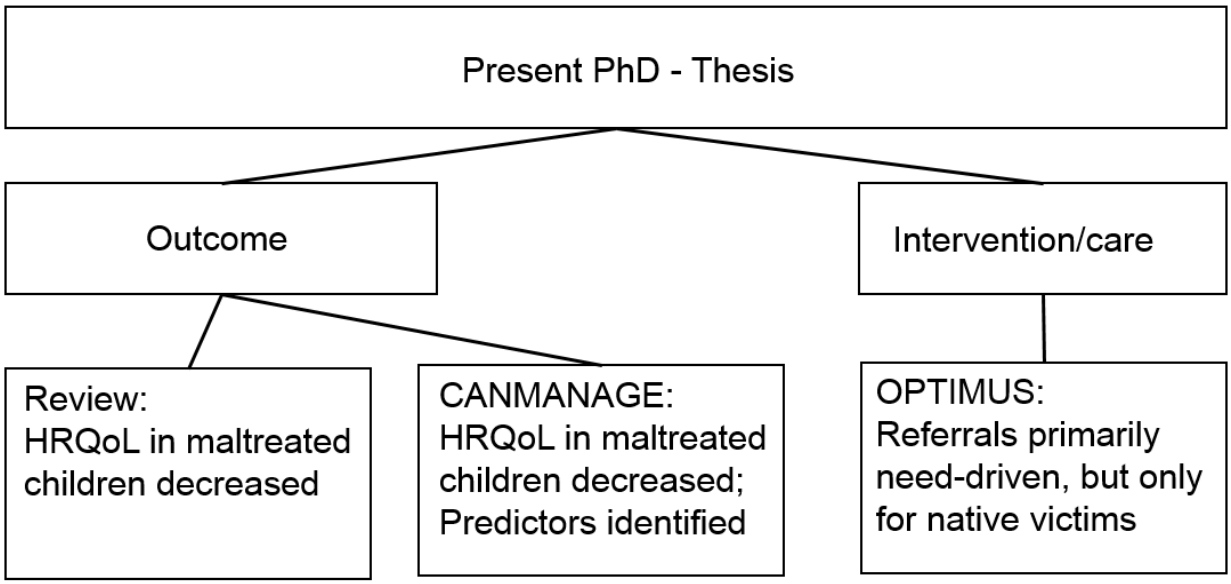

Figure 7. Overview of present PhD Thesis

As discussed above (Section A2), the measurement of HrQoL in maltreated children provides information that goes beyond the assessment of mental health and behavioural problems. HrQoL is a broad construct that addresses the functioning of the children in their daily lives. Not only mental and physical health are examined but also how the child functions in the social context

with peers and the family. We can conclude that maltreated individuals with decreased HrQoL suffer from major issues and limitations in their daily life.

The main result of the third paper—that sexually victimized immigrant children are ten times less likely to be referred to psychotherapy than native children—is particularly pertinent in the current refugee crisis in Europe. In 2015, more than 1 million people, both refugees and other migrants, came to the EU. Many of them arrived after incredible land or sea journeys (United Nations High Commissioner for Refugees, 2016). Refugee children are especially at risk of trafficking, abuse and exploitation. Sexual victimization of children is not uncommon in refugees. Further, migrants are often victims of discrimination, poverty, and social marginalization, both in transit and in the destination countries (United Nations Children's Fund, 2016). Additionally, the loss of the home and perhaps beloved family members as well as the horrifying trip to Europe may also have traumatized the children. Research indicates that unaccompanied asylum-seeking children in particular have experienced not only war-related suffering but also several other traumata, such as sexual victimization (Jensen, Fjermestad, Granly, & Wilhelmsen, 2015). These children do not have many resources and are at increased risk of developing adverse consequences after child maltreatment. A recent review did not find evidence that immigrant or refugee children are at higher risk of child maltreatment. But the authors concluded that newly settled immigrants and refugees experience specific risk factors related to their status as immigrants or refugees and to the challenges of settlement in a new environment. This in turn can lead to a higher risk of maltreatment (LeBrun et al., 2016).

The OPTIMUS study analysed whether children who need help after CSV (based on the assessment of the frontline workers) are referred to psychotherapy. The factor that decided whether a child was in need of help was not the event of sexual victimization itself but the personal assessment of the frontline worker about the consequences of this victimization to the child. Not all sexually victimized children develop mental health problems after CSV. The literature indicates that about half of all sexually victimized children do not show symptoms of psychopathology (Williams & Nelson-Gardell, 2012). Further, the OPTIMUS study did not focus on how many of the sexually victimized children were refugees or unaccompanied asylum-seeking children, and it is also important to mention that not every native child is referred to psychotherapy if needed. However, in the current refugee crisis in Europe, it is important to discuss why immigrant children, if maltreated, do not get the help they need.

Barriers to accessing treatment (e.g. psychotherapy) have been explored previously (Collins, Westra, Dozois, & Burns, 2004). The authors analysed the undertreatment of individuals with anxiety and depression disorders and identified barriers to accessing treatment on three levels: the individual level, the provider level, and the systemic level. Individual factors which impede affected individuals from obtaining effective mental health services include the fear of stigma and embarrassment, the lack of time for treatment, and cultural and demographic factors such as religious affiliation, age, and marital status (Collins et al., 2004). These barriers can also be used to explain why some victims of child maltreatment do not receive the help they need. The fear of stigma and embarrassment associated with cultural and religious aspects might play a key role for immigrants (Gilligan & Akhtar, 2006): perhaps not for immigrant children, but for their parents. Language barriers should also be taken into account when seeking to explain any decision not to refer a sexually victimized immigrant child to psychotherapy (Leong & Lau, 2001). Barriers at the provider level identified by Collins et al. include underdetection within the primary care sector, lack of knowledge of mental health problems, lack of willingness to diagnose and treat mental health issues, and stigma regarding discussion of mental health issues. Barriers at the systemic level include limited physician's access to mental health services, lack of awareness of the range of effective treatment options, limited availability of specialty mental health providers, and lack of integration of mental health serves in primary care (Collins et al., 2004). We assume factors at provider and systemic levels to complicate service provision for immigrants rather than factors at the individual level. The underdetection of child maltreatment in refugee children might be a particular problem at provider level. The lack of awareness about the range of effective treatment options and limited availability of mental health providers in other languages are examples of possible problems on the systemic level.

The specific value of this thesis

Maltreated children are often classified according to their mental health condition and behaviour. In this thesis, we examined another approach. We classified maltreated children according to their HrQoL. One can discuss whether this is a better approach to assessing consequences of child maltreatment. However, as mentioned before, HrQoL is a broader construct than mental or physical health. It incorporates different aspects of daily life, including physical conditions. Child maltreatment can affects all dimensions of the child's HrQoL, however, the impact of child maltreatment might not be equal on all dimensions. Identifying the most affected areas could help to plan and evaluate prevention and intervention programmes.

We did not investigate the adult survivors of child maltreatment, as many studies did before, but focussed on the child victims directly. Such an approach may avoid possible distortions such as recall bias (Weber et al., 2015). Moreover, because HrQoL encompasses multiple domains, it is likely that the well-being of adult individuals is affected not only by the presence or absence of maltreatment but also by variables at the individual, the family and the social context levels. These possible confounders have been addressed in research. Other authors have found that the relationship recalled between parent and child and adult depressive symptoms were stronger predictors of HrQoL in adult survivors than maltreatment in childhood (Rikhye et al., 2008). Studies that address children after maltreatment are therefore important to avoid these biases. What is also important is that we included not only proxy reports of HrQoL but also the self-reports of the children. Whether a child can be confronted with questions concerning a traumatizing incident or whether this may traumatize the child again has been discussed in research. Diverse researchers and practitioners have concluded that there is hardly any risk of being traumatized again by an interview (e.g. Becker-Blease & Freyd, 2006). Moreover, possible consequences should also be considered if a child cannot talk about the traumatic event (Becker-Blease & Freyd, 2006).

A further advantage of this thesis was that the samples included in the two research papers (CANMANAGE and OPTIMUS) were exceptionally large. This is unusual in such a difficult population. Families with maltreatment backgrounds often do not wish to take part in studies concerning these maltreatment events. As mentioned before (Section A1), maltreatment is a private event and occurs mostly within the family environment. This is not an easy research area and normally closed to outsiders.

Furthermore, thanks to the cooperation with the University Hospital in Ulm, data from Germany could also be analysed. Thanks to roughly comparable healthcare systems and living standards, the results can most probably be transferred to children and families in Switzerland. This provides an additional insight into child maltreatment and HrQoL from a German population.

Lastly, the OPTIMUS study analysed nationally representative data on psychotherapy referrals in Switzerland. A broad range of public and private agencies involved in child protection participated in the study; three hundred and fifty child protection agencies reported a total of 911 cases of CSV in Switzerland. This study completes this dissertation by analysing data on service referrals to gain a broader view on the topic of child maltreatment and service referrals for these children.

6 Limitations

In addition to the advantages of this thesis discussed above, some limitations also need to be considered. First, both the OPTIMUS study and the CANMANAGE study included data from cross-sectional studies. Those studies make comparisons at a single point in time, whereas longitudinal studies allow comparisons over time. The research questions in these two projects were adapted to the study designs; however, some limitations are inherent in this cross-sectional study design. Most importantly, this design does not allow statements about the causal relations between variables. Furthermore, the information we gather is only a snapshot of a single moment in time (Levin, 2006).

Second, the OPTIMUS study assessed psychotherapy referrals in sexually victimized children. Psychotherapy was assumed to offer a good opportunity to assess the consequences of CSV. However, the relationship between psychotherapy and HrQoL was not examined. The question arises whether children who receive psychotherapy after child maltreatment show improved HrQoL compared with maltreated children who do not. Goldbeck et al. (2016) examined this relationship and did not find an improvement of HrQoL in the treatment group. HrQoL was the only factor in the analyses that did not improve after psychotherapy (Goldbeck et al., 2016). One possible explanation is that recovery of HrQoL is delayed. As mentioned before (Section A2), HrQoL is a multidimensional concept that includes physical, psychological, and social functions. It might take some time for all dimensions of this broad construct to recover and improve. During adolescence in particular, when wellbeing has been shown to decrease (Goldbeck et al., 2007), potential increases in HrQoL after psychotherapy might be occluded.

Third, the OPTIMUS study only analysed psychotherapy referrals for cases of CSV. However, CSV is just one type of child maltreatment. Children who have suffered from other types of maltreatment, such as psychological maltreatment and neglect, also profit from psychotherapy (Skowron & Reinemann, 2005). It is unclear from this study whether psychotherapy referrals for other forms of maltreatment have the same biases or whether the same case characteristics influence the decision of the case managers.

Fourth, analyses of HrQoL in maltreated children should assess not only individual needs but also parental and family needs. In the studies presented in this thesis (CANMANAGE study and OPTIMUS study), individual needs were addressed. However, as mentioned before, children normally live in a familial environment. The family plays an important role in the life of a child, especially at younger age. In both the OPTIMUS study and the CANMANAGE study, parent- or caregiver correlates were also included in the analyses. In the CANMANAGE study, no parent-

related factors were significant predictors of the child's HrQoL. Therefore, conclusions on parental needs cannot be drawn, but in any case these were not the objective of the analysis. Family needs were not assessed in the analyses of the two research papers. However, such an assessment might be important in the field of child maltreatment and service referrals. An integrated, multidisciplinary approach which included family needs as well as individual needs would be beneficial (Dorsey et al., 2016).

Finally, the relationship between HrQoL and long-term consequences has not been addressed in this thesis. As hypothesized above, HrQoL might be an indicator of long-term consequences in adulthood. To assess this hypothesis, long-term studies are needed to examine HrQoL in children and consequences of child maltreatment in adulthood.

7 Implications

7.1 Implications for HrQoL research

First, the relationship between psychotherapy and HrQoL in maltreated children was not assessed in the analyses of this thesis. One study addressed this relationship and did not find an improvement of HrQoL in maltreated children (Goldbeck et al., 2016). However, long-term results are lacking. Future research should therefore address this relationship to analyse whether psychotherapy can improve HrQoL in maltreated children in the long term. Further, we did not examine psychotherapy referrals in other types of child maltreatment than sexual victimization; these should also be assessed in future studies.

Second, family needs should be addressed in research into child maltreatment. The needs of the maltreated individual have been addressed in research, and in many cases, maltreated children or adult survivors of child maltreatment receive some kind of help if needed. However, maltreated children often live within a family, and the parents and siblings might be affected by the maltreatment, especially if the offender was a family member or a friend of the family. Parents might feel responsible for the incident and guilty for not preventing the maltreatment. Siblings might lose the feeling of safety in the family environment and might not know how to talk about the trauma. Not much is known about parent and family needs after child maltreatment, and these needs should be addressed in future analyses.

Third, only cross-sectional data were analysed in this thesis. However, longitudinal research is needed in this field. It is only with longitudinal analyses that trajectories of HrQoL in maltreated children can be analysed and conclusions drawn about the effectiveness of intervention. There might be adaptation in adult survivors to the situation experienced in childhood. Adult survivors have learned how to live with the experience of child maltreatment. Stigmatization might further impede an adult from talking about what happened. Research is lacking concerning the long-term consequences of child maltreatment and their relationship with HrQoL. Latent class analyses, for example, could address this research topic.

Lastly, we excluded maltreated children with chronic physical impairments or disabilities from the analyses. However, the literature indicates that chronically disabled children are at increased risk of being maltreated (Section A1). Not much is known about the HrQoL of chronically disabled or impaired maltreated children. This research gap should also be addressed in future studies.

7.2 Implications for research into service provision

Research is needed to ascertain the underlying mechanisms and proximal variables that influence the differing provision of psychotherapy to victims of different nationalities. The bias identified in the OPTIMUS study needs to be addressed. The OPTIMUS study provided evidence of disparities in mental health service provision between immigrants and the native population (e.g., Abe-Kim et al., 2007; Straiton, Reneflot, & Diaz, 2014). Factors at provider and systemic levels are assumed to complicate service provision for immigrants rather than factors at the individual level.

7.3 Implications for clinicians

As we have seen, maltreated individuals suffer from diverse long-term consequences. Mental health problems such as behaviour problems, PTSD, and depression are among the most commonly reported outcomes of child maltreatment (see Table 2). We would therefore propose that the mental health of a maltreated child be assessed regularly. The assessment could be included in routine check-ups. Questionnaires can be filled in while waiting for the medical examination. It is obvious that simple feasibility is crucial. A valid and economical solution might be electronic versions of a questionnaire on tablets. Standardized assessments of HrQoL in maltreated children (e.g. the Kidscreen-10 questionnaires; Ravens-Sieberer et al., 2010) could unveil problems in a broader way than mental health screenings. This could be used to obtain an overview of affected life domains and the general functioning of the child.

Additionally, clinicians should be aware of predictors of HrQoL in maltreated children. The strongest predictors identified in the CANMANAGE project were PTSS and emotional and behavioural symptoms. It is important to treat these symptoms and therefore to refer an affected child to professional help such as trauma-focussed cognitive-behavioural therapy.

As we have seen, not all children who need professional help after maltreatment are referred to appropriate therapies. Improving access to effective treatment is therefore crucial. This can be achieved by educating physicians about the empirically supported treatment available and by increasing collaboration efforts between medical and mental health professionals (Collins et al., 2004).

7.4 Implications for policies (Intervention/Prevention)

As we have seen, maltreated children suffer, most of them during their whole lives. Policies should therefore invest in prevention in this field. In particular, if child maltreatment can lead to

epigenetic modifications to genes in affected children (see section A1.3.4), prevention of child maltreatment is essential.

At the first level of prevention (see Figure 2), public awareness and education campaigns programmes (e.g. the triple p program; Prinz et al., 2009) in school systems or media can inform society about the problem effectively. However, due to financial restrictions, prevention at the second level, which targets children at increased risk, might be more efficient. Risk factors for child maltreatment have been described at the individual level, the family level, and the extra-familial and cultural level (Section A1.2.2). The high-risk focus on secondary prevention of child maltreatment targets families in which risk factors such as poverty, young parental age, parental substance abuse, and child disabilities are present. Parenting programmes such as "My Baby and Me", where mothers at risk learned to improve parenting (Akai, Guttentag, Baggett, Noria, & Neglect, 2008), have been shown to significantly reduce risk factors and thus prevent child maltreatment (Chen & Chan, 2016). Further examples of secondary prevention strategies are parent support groups and home visiting programmes for high-risk families (Knerr et al., 2013). Policies should invest more resources in parent education programmes to prevent child maltreatment.

At the third level of prevention, children who have already suffered from maltreatment are addressed to prevent long-term consequences. As mentioned before, these consequences may include epigenetic modifications to genes. Since the OPTIMUS study has shown that immigrant children are at increased risk of not being referred to psychotherapy after CSV, governmental funding for mental health services should be increased to expand availability and access to appropriate treatment for groups that are hard to reach or disadvantaged. A further result of the OPTIMUS study was that children who were reported to penal authorities such as police stations were significant less likely to be referred to psychotherapy. Policies should therefore invest in information and education to enhance the likelihood of these children being referred.

8 Conclusion

This thesis presented three papers which addressed maltreated children, their HrQoL, and psychotherapy referrals after CSV. Two projects presented in this thesis found decreased HrQoL in maltreated children. The question whether these children receive professional help after being reported to a child protection agency has been addressed in an additional study, and potential biases have been identified. The three studies contribute to filling a gap in research into maltreated children and their HrQoL. By providing a deeper insight into these aspects, this thesis contributes to a broader understanding of HrQoL and service referrals in maltreated children. Knowledge about HrQoL in maltreated children can illuminate domains that may become targets for intervention and can support the children beyond the assessment and treatment of psychopathologies. It is hoped that this dissertation will lead to more research and theory building in this area and ultimately to initiatives that help these children. There are still many discoveries to make and steps to take in the field of HrQoL and in service provision for child maltreatment.

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ACKNOWLEDGEMENTS

To my grandparents
They would have been proud

And to Heidy
We miss you

I would like to gratefully acknowledge all the people who supported me throughout my dissertation project. Their advice and emotional support has contributed greatly to this dissertation. First of all, I would like to thank my supervisor, Markus Landolt for his continuous scientific and motivational support. His guidance was essential to the successful completion of this dissertation project. My appreciation also goes to Guy Bodenmann, who was willing to supervise my dissertation as a member of my doctoral committee. Further, I would like to thank Andreas Jud and Ulrich Lips for providing me with the opportunity to conduct this project under their supervision at the University Children's Hospital; thank you for your advice and practical and motivational support. I also am grateful to the Child Protection Group at the University Children's Hospital in Zürich for their support and help in data collection. Special thanks go to Erika Saladin and Georg Staubli for their continuous motivational support.

I very much appreciated the many discussions and exchanges I had with my fellow doctoral and postdoctoral students: Eva Alisic, Anke de Haan, Ann-Christin Haag, Ornella Masnari, Norma Ruppen, Ana Vedes, Helene Werner, and Nina Zeltner. Very special thanks go to Eva Alisic, Anke de Haan, and Ann-Christin Haag, who gave insightful comments and suggestions, and to Nina Zeltner, who accompanied me as an office colleague throughout this dissertation project. Her support, encouragement, suggestions, and comments were invaluable. Thank you for sharing this experience with me.

I was extremely fortunate to have been surrounded by family and friends who supported me in so many ways. Particular thanks go to Barbara Giacomelli, Daniela Hamperl, Irina Kaufmann, Andrea Jäger, Vanessa Schulthess, and Aita Sommerau, who provided distraction and comfort and helped me to change perspective from time to time. I also want to thank Silvia und Jürg for their motivational and practical support.

Finally, I address my deepest gratitude to my parents Hanspeter and Sibylle Weber for their support and encouragements in everything I do and to Tom Jaggi for his love, patience, motivation, and personal sacrifices throughout this undertaking.

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